# CITY GOVERNMENT.

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VOL. 8, NO. 1. JANUARY, 1900. $3 A YEAR.

## CITY GOVERNMENT,

*Devoted to all Departments of City Work,*

PUBLISHED MONTHLY BY

CITY GOVERNMENT PUBLISHING CO.

3 Western Union Bldg., . TROY, N. Y.,

Where all communications should be addressed.

NEW YORK OFFICES, . 111 Nassau St.

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## *ABOUT CREMATING NEW YORK'S GARBAGE.*

Dr. Alvah H. Doty, health officer of the port of New York, deserves to be encouraged in his efforts to abate the garbage reduction nuisance on Barren Island. The doctor is quite right when he says the only solution of the problem is to cremate the garbage at crematories located along the water front, but he reaches a most serious error when he states that none of the systems of burning refuse in the United States has been a success. If the doctor had taken even a small part of the time he spent in traveling in Europe last summer and devoted it to observations in his own country he would now know the absurdity of looking across the sea to Hamburg for a satisfactory garbage crematory.

Dr. Doty undoubtedly recommends the Hamburg system because he knows of no American system of equal merit, and therefore it is proper that he should have some of the successful garbage disposal works on this side of the water pointed out for his attention. He is a good enough American citizen, most likely, to avoid going abroad for something that can better be procured at home. If the doctor wants to see a crematory that will dispose of house swill in a sanitary and economical manner he need travel no further than Trenton, N. J., or Wilmington, Del., and if he wants to find another kind of crematory, the kind that is successfully used for burning mixed city waste, it will be unnecessary for him to cross the ocean.

In Europe all city wastes, including house swill, market refuse, ashes and dry rubbish, are collected and disposed of in one mass. In this country it is customary for the municipality to care for only the house swill and market refuse and leave the ashes and dry rubbish for the private householders to dispose of in any way they choose. The European practice is undoubtedly the better, from both sanitary and economical standpoints. It is better because it mixes the wet and dry refuse, thereby retarding putrefaction sufficiently to allow ample time for the collection of the matter before it becomes noxious; it is better because it removes ashes and dry rubbish frequently, and thereby avoids the nuisance that arises from having such matter heaped in alleys, back yards, or cellars, or strewn about the streets; it is better because mixed refuse can be cremated at less cost than can garbage with 70 per cent. of liquid substance; it is better because a joint collection of all wastes is less annoying and less expensive than a separate collection.

Hamburg, the place mentioned by Dr. Doty as having the model garbage system, enjoys all the advantages of joint collection and disposal. In nearly all of the American cities where garbage cremation is practiced only wet garbage, containing generally about 70 per cent. of liquid matter, is collected and burned. In these cities the crematories are required to dispose of matter greatly dif-

ferent from the garbage of Hamburg, and the process of disposal is of course more expensive. To dispose of wet garbage in a sanitary manner is a problem much more difficult than the sanitary disposal of mixed wastes, and it is because most of our American crematories have been built to deal with liquid matter that some of them have failed. However, there are many crematories in this country that successfully dispose of wet garbage. The cost of their operation ranges all the way from 50 cents to $1 per ton of garbage consumed. We trust Dr. Doty has not compared the cost of operating this type of crematory with that of the Hamburg type and from such comparison reached the conclusion that no American incinerator is a success. Such a comparison is obviously unfair.

In a few cities on this side of the Atlantic the joint collection and disposal of city wastes is practiced, as it is in Hamburg, and in these cities the crematories are operated at a lower expense, per ton of garbage consumed, than that of the Hamburg crematory. A little investigation of the incinerators at San Francisco, Cal., and at Montreal and Westmont, Canada, will bear out the above statement.

New York now collects all wastes at public expense, but the wet garbage, the dry refuse and the ashes are taken up separately. It would be an easy matter to change to the joint collection system in this instance, because such a change would add nothing to the tax levy, and would, at the same time, make final disposition by cremation practicable. The garbage of New York, wet and dry mixed, could undoubtedly be cremated at crematories located along the water front, at an expense of from 10 to 15 cents per ton ,without the slightest offense to people living near the disposal plants. Crematories capable of this work are already in operation at San Francisco, Montreal and Westmount, and it is entirely unnecessary to copy the Hamburg plant.

## *PROTECTION OF WATER SUPPLIES.*

More and more attention is being given to the question of the protection of water supplies from waste and pollution, and necessarily so, not alone in this country, but in Europe, especially in England, where the continuation of suplies used by the people is already a matter of Federal control. This must also be the trend of legislation in this country. A bill was introduced in the house of representatives early this month by Mr. Bartholdt of Missouri, providing for the appointment by the president of three commissioners to investigate such pollution of rivers and other natural sources of water supply as threatens to affect the condition of the people of more than one state.

Under the laws of this country the state alone controls the continuation of supplies used by people within the state where the fouling of the water arises, and it is only when interstate interests are involved that the national government can intervene. Narrow as is the scope of federal jurisdiction it is none the less important. To obtain abundant supplies of pure water for cities is becoming daily, even hourly, a more and more difficult problem and too careful and exhaustive an investigation of this urgent situation cannot be made.

There is scarcely a large city in the United States or England which is not to-day facing this problem in some form or other—either in the form of an inadequate or of a polluted supply. London's supply of pure water is far from adequate or of a polluted supply. Lon- Ramapo augmentation for the needed supply for the future, Jersey City and Philadelphia have their polluted supplies, Chicago has spent millions on its new drainage canal to avoid pollution in the future, and now St. Louis is threatened in its supply by the sewage of Chicago. And so we might go on augmenting instances which show not alone the importance, but the seriousness of the question of protecting all water supplies, not alone from pollution but from waste.

The commission which Mr. Bartholdt has in view is not given any other powers than are necessary for investigating purposes. Its members will be granted the very modest sum of $10 a day each and expenses, but they are authorized to employ chemical, bacteriological and sanitary experts and other persons in a position to furnish useful information. The total expense of the investigation must not exceed $30,000, and the report must be submitted to the next session of congress.

Such an investigation entrusted to the proper parties would be of permanent value, and the men so appointed should be men of previously acquired knowledge of the engineering features and also of the particularly delicate legal aspects of the subject, or the commission would become a mockery and its recommendations of no weight. The time for the investigation is too short and the appropriation too small to educate the members of the commission as some have been educated at the public expense in the past.

In England the protection of pure water supplies is being strenuously agitated. The water supply committee of the Wiltshire county council, at the last meeting of the council, introduced the question recently raised by the county councils association, as to the condition of the law affecting sources of water supply. They pointed out that Wiltshire was a county in which the question of public water supply was in many cases attended with considerable difficulty and therefore it was to the interest of the county that such supplies should be protected from waste and pollution. The resolutions passed suggested in brief, that a local board, representing the whole of the county, and called a "water authority," be granted powers to protect the whole of the water supply within the area of the county; that no new works shall be constructed or wells sunk without their permission; in fact, the board to be the final arbiter on all questions of whatsoever kind relating to water within the administrative area.

Mr. C. E. Hobhouse, in moving the adoption of the resolution, pointed out that as the law at present stood, it was in the power of any individual or company to buy a small portion of land, pump water from wells around, drain the district and make a profit by the sale, a state of affairs which was not at all equitable for the neighboring owners of land and the population generally. Needless to say the resolutions were carried.

Legislation regarding water supplies is badly needed in all respects in the United States, as well as England, and very serious attention must be given the subject in the very near future.

## *MAYOR McGUIRE ON MORAL ISSUES.*

Mayor McGuire of Syracuse has been having a little argument with a preacher critic of his administration. The preacher contends that the mayor ought to "morally purify" the city by eradicating the social evil and prohibiting "beer drinking on Sunday." In case the mayor permits such things to continue, the preacher thinks the city of Syracuse will come to no good end.

"The social evil," says the mayor, "has existed since the creation of the world, and will exist, doubtless, to the end of time. I am satisfied that the localization of the public part of the evil, which is in reality only an infinitesimal portion of a widespread national evil, is the only means of restriction, and is a much wiser method than to make raids and scatter the unfortunate creatures all over the city. No city in the world has ever suppressed the evil. I have traveled extensively, made many inquiries in this direction, and find that the evil practically exists in the same proportion in every American city. And it is a curious habit for the average citizen of each place to shake his head and say his town is the worst."

As far as the "beer drinking on Sunday" is concerned, Mayor McGuire, who, by the way, never takes a drink of anything stronger than ice cream soda, is of the opinion that it is no worse for a man to get drunk on Sunday than on Monday. Furthermore, the mayor says: "If a man is foolish enough to get drunk, he had better do so in a saloon than in his own home."

In the course of a lengthy published statement, in which it is shown that serious crimes have greatly decreased in number in Syracuse during the past few years, the mayor says: "A liberal government helps to make Syracuse a thriving city. It brings visitors, conventions and business to the city. A narrow, contracted, Puritanical policy would cause the grass to grow in the streets of the city. Liberally governed cities and progressive cities are synonymous terms in America."

## *THE REPORT OF MR. MOSS.*

The report of Frank Moss, counsel of the Mazet investigating committee in New York, was prematurely published on December 25. The committee will not accept the report, it is said, but will formulate other recommendations to the legislature.

It will be remembered that this committee has been investigating the government of New York city as administered by Tammany Hall, and that the investigation has been generally discredited by its partisan character, the republican majority failing to look into matters in which republicans were supposed to be concerned. When the committee adjourned it was reported that the sessions were suddenly suspended to avoid the calling of Mr. Platt.

Mr. Moss summarizes the testimony taken by the committee, and makes some recommendations that are of general interest. Mr. Moss contends that representative government has been destroyed by the system of appointive commissions of various departments who are independent of the mayor and who are responsible to no one. The report says:

The mayor had an absolute power of removal for six months, but that has expired. He can remove now only on legal charges and trial, with the approval of the governor of the state, and the removal is subject to review by the courts. He now washes his

hands of them, and falls back on the charter, which prescribes their powers and his and protects them from him as though they were elected officials of the highest consequence and value. They, regardless of him, and of the people in many cases, proceed with the exercise of governmental functions of the highest nature and deal with the most valuable rights practically secure from any interference and control in the interests of the people. This is not according to the ideals of American government. It is true that by indifference or through ignorance the people may permit the best form of government to become despotic, but they are entitled to at least to a form of government which will leave open to them a way to obtain actual representation in the executive and administrative departments if they will take the trouble to do it.

Counsel have procured statements of the views of many eminent citizens on this point and on kindred points, and there is almost a unanimous agreement that the mayor's absolute power of removal of appointed officers (not judicial) should be coextensive with his term; that he should be required definitely to oversee his appointees, and that he should be responsible for their acts, as a part of his own administration.

Mr. Moss thinks that the shorter mayoral term would tend to secure better services to the people:

It is generally agreed that the mayor should be made eligible for re-election (after the present term, which should not be disturbed), and thus be in a position where he is most likely to listen to the people and to sympathize with their desires. We strongly urge you to report that the mayor's term (after the present term) should be two years instead of four.

Upon the subject of other needed reforms the report says:

The municipal assembly should be reduced to one body, the board of aldermen, with the borough presidents. Its members should be compelled to attend its sessions, and should receive $2,000 a year salary. It should have power to originate and to amend important measures. The power to grant all permits should be restored to the mayor's office.

Methods should be provided by which local boards, the municipal assembly and its members may obtain all desired information of department plans and objects, and each borough president should be entitled to the services of an engineer.

Everything is to be gained by dignifying and enlarging the powers of local boards and borough presidents to the highest possible point that can be reached without absolute impairment of consolidation.

Counsel would recommend that the committee report in favor of the passage of a bill prohibiting contributions by judicial candidates.

The movements of the Ramapo Company and of certain bridge and tunnel companies that have secured private franchises show the tendency for speculators to obtain rights from the legislature which, with the connivance of local officials, can be converted into money. The presence of prominent members of both parties in these companies, based directly on state legislation by special acts, and which are not designed to do business by themselves and without city support, causes public suspicion that combinations exist to secure public action on both sides of the line of political division, and leads inevitably to scandal. Presumably the city is competent to build and maintain all great public works within its territory, and will sooner build or buy than permit private persons to own and profit by works of necessity. The obvious remedy is to cease the granting of such franchises, unless with notice to the city authorities and with their consent.

## *FRANCHISE COMMISSION SUGGESTED.*

Mayor Hayes of Baltimore will endeavor to have the Maryland legislature pass a law creating a franchise commission for the city of Baltimore. The mayor's idea is that this commission should consist of the mayor, city comptroller, city register and two others to be appointed by the governor. The duties of the commission will be to inquire into the property holdings of the various companies operating under franchises granted by the city, and to consider the relations existing between such companies and the city, their capital stock, bonded indebtedness, etc. This commission will report to the legislature in 1902 the basis upon which the companies should be taxed and remedial legislation could be enacted to put an end to the contentions arising from time to time between the city and the companies or corporations. The mayor has definite ideas as to the construction of the bill, having prepared a similar one in 1898 which failed of passage through the legislature.

## *GOV. ROOSEVELT ON PUBLIC UTILITIES.*

In his annual message to the New York legislature, Gov. Theodore Roosevelt argues for and against the municipal ownership of public utilities. He takes up both sides of the question and, by the injection of clever qualifying phrases, makes out a fair and altogether reasonable argument. The governor says: "There is no possible reason in pure logic why a city should supply its inhabitants with water and allow private companies to supply them with gas." Then immediately he resorts to the convenient "on the other hand" and says "pure logic has a very restricted application to actual social and civic life, and there is no possible reason for changing from one system to the other simply because the change would make our political system in theory more symmetrical."

Governor Roosevelt cannot possibly go wrong in his public utterances so long as he adheres to the clever style of his recent message. No one, not even the most clamorous advocate of municipal ownership, will challenge the truth of his statement that there would be no reason for changing from private to public hands the ownership of any public utility simply to promote symmetry in our political system.

Now follow the governor further. "Obviously," he says, "it is undesirable that the government should do anything that private individuals could do with better results to the community." Then comes "on the other hand" the statement that "when private ownership entails grave abuses and where the work can be performed better by the municipality no theory or tradition should interfere with our making the change."

The governor speaks the truth from whatever side he views the proposition. His message, in so far as it treats of the important public question of municipal ownership, is a jewell of consistency and a gem of phroseology.

## *DEPARTMENT STORE ORDINANCES VOID.*

The supreme court of Illinois has decided that the ordinances of the Chicago city council to curtail the business of department stores are unconstitutional and void. One of the ordinances prohibited the sale of meats, butter, lard, vegetables and other provisions in the same building where dry goods, clothing, jewelry and other articles were sold, and the other prohibited the sale of spirituous and malt liquors in stores where dry goods were sold. The Illinois court holds that the multifarious business of department stores is legitimate.

The decision could not have been otherwise. A man has a natural right and a right under the constitution to enjoy his property and to dispose of it as he pleases. This right is subject to police regulations for the protection of the public. A man can not use or dispose of his property in a way to injure the general health, the morals of the community, or the safety of individuals. The sale of meat, vegetables, liquor and dry goods in the same store is no injury to the public health, morals and safety.

## *COL. SMITH SUCCEEDS MAYOR PRICE.*

Col. Bridges Smith has been unanimously elected mayor of Macon, Ga., to succeed the late S. B. Price. For the past thirteen years Col. Smith has served as city clerk of Macon, and his ability to cope with municipal problems has therefore been thoroughly and satisfactorily tested. The late Mayor Price, than whom no better man ever lived, has a most worthy successor—one who for years enjoyed his full confidence and friendship.

Before he became city clerk, Col. Smith was city editor of one of the Macon dailies, and upon the occasion of his election to the mayoralty, his old newspaper friends, comprising the Macon Newspaper Club, give him a dinner. Here is the menu:

Auto-Mobile Plants,
Top of column next to reading matter.

Kalamazoo Celery, two sticks to a take. — Sherry, two-em dashes.

Salted Almonds (tf.) — Lettuce, takes a big head.

Beef Tea in Scoops hot from the Hell Box.

Broiled Pompano a le Maire de la Ville.
Pommes alias Spuds, DeVinne.

Claret, head to follow.

Tenderloin,
carefully roasted by police reporter.
Asparagus border.

Insert three-em dash.

Broiled Quail, double leaded.
Gothic P's and Q's, small caps.

Plagiarized Chicken, run in.
Tom Arter Sauce.

Turkey Salad, a space killer.

Apple, Turn rules.

Pumpkin Pie a la Pendleton.

Cafe Noir, Old English.
Cigars. Insert more dashes.

Close up forms.

Mayor Smith is a warm supporter of the League of American Municipalities, having taken a conspicuous part, while city clerk of Macon, in the conventions at Detroit and at Syracuse.

## *FREIGHT ON STREET CARS.*

In a number of cities the question as to whether a street railway has a right to carry freight is under discussion. It is a question of considerable moment, and may be answered in different ways in different states. As far as New York state is concerned, the right of street railway companies to do a freight business, so long as it does not interfere with passenger traffic, is quite well established. For several years the trolley lines of Brooklyn have been operating express cars, and their right to do so has been passed upon by the appellate division of the supreme court. The decision was rendered recently in a suit brought by a taxpayer of Brooklyn to restrain the trolley roads from running the express cars. The New York "Chronicle" reviews the decision as follows:

The opinion in the case was prepared by Justice Hatch, and his views are concurred in by all the other justices—Cullen, Bartlett, Woodward and Goodrich. He said that the only question for the consideration of the court was whether street surface railway companies, authorized by the general railroad law of the state, can operate cars de-

signed and intended exclusively for carrying express matter, freight, or property, and used exclusively for that purpose. He shows that the language of the general railroad law of 1890 is so broad as to leave no room for doubt that they can do so. He does not, however, rest his contention solely on that fact. He goes into a history of the legislation on the subject for the last fifty years and also reviews the judicial interpretations that have been made from time to time. He says it cannot be doubted that the legislature has authority to charter a street surface railroad company and grant the power to carry freight exclusively or passengers exclusively, or to unite the authority to carry both. He cites cases where in special acts the legislature has limited the right of street railroad companies to the carriage of passengers only. He shows that in other cases express authority has been given to carry both passengers and freight.

From this decision it seems that street railways have the right to carry freight, excepting in cases where the companies' charters expressly forbid it. The public might under certain circumstances derive much benefit from the carrying of packages and light freight by street cars. One of these circumstances is when a street car line runs from a thickly settled community out into the suburbs; with such a road the carrying of freight would be of great advantage to the suburbanites, and would to a great extent obviate the filling of a passenger coach with bundles of all kinds to the discomfort of passengers.

## *EDITORIAL COMMENT.*

Wilkinsburg, a borough in the state of Pennsylvania, is to enjoy three-cent car fares. A traction company that wanted to lay its tracks through the borough in order to reach Pittsburg has accepted a franchise which gives many advantages to the residents of the small municipality. The franchise ordinance imposes a tax of $30 per year on every car, requires through night cars to be run to and from Pittsburg regularly, and sets the limit of fare to be charged within the borough at three cents.

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The city of Allegheny, Pa., gives its banking business to the two banks offering the highest rate of interest on daily balances. The custom was inaugurated in 1872 by Controller James Brown, who is still at the head of the finance department. Bids are advertised for in March of each year. The successful banks are each required to put up a bond of $500,000, qualified to the amount of $1,000,000 each. Last year the city received $21,672.57 as interest at 3 per cent., on its daily balances.

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Mayor David S. Rose, of Milwaukee, at a recent meeting of the League of Wisconsin municipalities, paid his respects to the Milwaukee Municipal League. The mayor stated that he had at first misunderstood the character of the state league, presuming it to be such an organization as the Milwaukee Municipal League, which is composed of "fault finding preachers and professors who aim only to tear everything down and avoid reconstruction." He said he was opposed to the so-called professional reformer and would do whatever he could to wipe their organization out of existence.

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Mayor Perry, of Grand Rapids, Mich., in pursuance of a council resolution, has appointed Aldermen Stewart, Seymour and Muehling a committee to consider the advisability of making a trial in a limited number of precincts with the view of the subsequent use of voting machines.

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The Kansas Municipal League met at Kansas City, Kan., last month and decided upon a number of bills providing for municipal improvements which it will ask the state legislature to pass. The most important bill provides for the establishment and maintenance of public parks by cities of the first class and authorizes such cities to levy special taxes against the benefited property for such work. The league also passed a resolution instructing the legislative committee to prepare a bill authorizing cities of the first, secon dand third class to condemn and purchase water, gas and electric light plants and other public utilities except street cars.

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We have just received a copy of the annual report of the state sewerage commission of New Jersey, which is abstracted in another column. Right in line with the discussion of the subject of protection of water supply areas they ask to have their powers extended to embrace control of the water supplies as well as the sewerage. As this commission can in no sense be called a political organization, the best interest of the state demand the granting of their request.

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Councils of York, Pa., have passed the franchise ordinance of the York Haven Water and Power Co. over the veto of Mayor Frank Geise. The ordinance grants to the company the right to build and operate an electric light and power plant in the city of York. The councilmen voted for the ordinance because they considered the benefits to the city that would accrue from local competition in the electric field, believing that the York Haven company would not enter into a combination with the existing plant, although there is nothing in the new ordinance to prevent it. To secure such competition a franchise was granted to a second electric company some years ago; the second plant was built and operated independently but a short while before it was combined with the first plant and competition ceased. Mayor Geise, in vetoing this last franchise, hints that the promoters of the new enterprise are only looking for another interesting combination. The mayor favors the establishment of a municipal plant, but the granting of this last franchise over his veto makes it almost certain that the city will not go into the electrical business for some years, if it ever does.

## ROCHESTER A HEALTHY CITY.

The city of Rochester, N. Y., has one of the best organized and administered health departments in the country, for which Health Officer Goler deserves the credit. The equipment is not only inadequate, but causes one to wonder how Dr. Goler accomplishes so much with so little.

Well directed efforts is the redeeming feature of this department, and is the cause of the good showing in the annual report, from which the following is quoted:

"Estimating the population of the city to be 180,000, and the estimated number of deaths at 2,275, gives a death rate of 12.63 per thousand. The number of births, 2,675, gives an annual birth rate of 14.86. The number of marriages, 1,263, shows a marriage rate of 7 per thousand. The death rate is .11 higher than that of last year. During the last three years it has varied between 12 and 12.60 per thousand. The birth rate has been lower for the past two years than for many years before, varying nearly 3 or 4 per thousand and lower during the past two years than for many years prior. This is believed to be an apparent, not a real, diminution. It is owing to the fact that the law which requires the payment of a 25-cent fee for the report of births has been evaded, and the birth certificates that would otherwise be forthcoming are not presented at this office.

* * * *

"While the death rate in itself is low, and the actual increase in the number of deaths is small, a glance at the table of deaths from preventable diseases shows that there has been a slight rise in many of them. There were 17 deaths from scarlet fever, against 8 in 1898; 28 deaths from typhoid, against 21 in 1898; 54 deaths from diphtheria, against 42 in 1898; 260 deaths from consumption, against 267 in 1898; 307 deaths from bronchitis and pneumonia, against 257 in 1898.

"The maintenance of the low general death rate arises chiefly from the small number of deaths in children under five years of age. For the last three years this rate has remained nearly stationary. For a period of sixteen years prior to 1896 the percentage of deaths under five years of age, averaged more than one-third of the deaths from all causes. For three years past the percentage has been but 22 per cent. of the deaths from all causes. During the sixteen years prior to 1896 the lowest number of deaths recorded under five years of age for any one year is 582; the highest that has been recorded in any one year, 963. For 1897, the number of deaths under five was 458; for 1898, 482, and for 1899, 481."

Regarding schools Dr. Goler says: "I have only to reiterate the statement made in the last two annual reports, concerning the ventilation, lighting, warming and cleaning of our school buildings. In cold weather most of our school buildings are heated, not warmed. There seems to be no means of controlling the amount of warmth in the building. The consequent amount of sickness in children, living for several hours each day in a dusty, dry, overheated and badly ventilated building may, in some measure be shown by the absences, but in many cases the seeds of illness in after life are sown in the school without modern sanitary requirements. Many of the schools are not clean. I reiterate the recommendations made during the last two years which provided, at practically no cost, a partial solution of the ventilating and cleaning problem.

"First—There should be a supply of window boards for every school in the city, where such boards have been proven to be necessary.

"Second—There should be a rule compelling janitors of all schools to use ordinary good sense in cleaning the school buildings. Some of the school floors should be cleaned more frequently than they are with clean water, brushes and soap. Sweeping should be prohibited in the schools while any of the classes are still in session. Sweeping should always be done with the windows open and not with the windows closed, as is the usual custom in cold weather. The feather duster should be prohibited. A plan should be devised for supplying a sufficient amount of moisture to the air in all of our school buildings. The catharrhal conditions prevailing among school children are due alike to bad air, dirty air and to dry air. Dry air is thirsty air, and if it cannot get water from the rooms it takes it from the mouths, noses and throats of the teachers and pupils, and thus makes catarrah and diseases of the lungs prevalent."

## NEW GARBAGE PLANT OPENED.

The town of Westmount, Quebec, has approved of the Decarie system of garbage cremation, and given out a contract to have the whole of its civic waste, including ashes, incinerated by that method. Before giving the contract, however, the town government sent a deputation to the United States to examine the different systems in operation there. After their return a committee was appointed, to act with their own engineer, to examine the Decarie incinerator, which had been erected in the adjoining municipality. After the most thorough test, extending over some weeks, they reported so favorably that the council decided to make a contract for the handling of all their civic waste, including ashes.

The contract began on November 20, and since starting the fire on that date there has not been used a pound of coal in the incinerator, and all the coal used in the gas consuming chamber in the stack has been screened from the ashes of the incinerator and has therefore cost nothing extra.

The plant is a twenty-ton (in twenty-four hours), portable steel boiler, and has been run with from twelve to fifteen tons of garbage in twelve hours, and could easily handle thirty tons in twenty-four hours without coal, the garbage being its own fuel. There is an open one-inch pipe into the stack through which the steam escapes continually, besides which, the boiler is fitted with two three-inch safety valves, set at seventy pounds, and most of the time these are blowing off steam, showing what an enormous capacity this boiler has for producing steam simply with garbage as a fuel. This valuable product could be utilized to run an electric light plant or for any manufacturing purpose, or hot houses for plants or early vegetables, and thus be a source of considerable income. Some of the advantages of the Decarie system are that it burns the garbage without other fuel than itself; that it consumes mixed garbage, including ashes, and without creating smoke or noxious gases; that it produces steam power to the extent of two or two and one-half horse power to the ton of garbage, and the residue is a clean ash and clinker.

It might be of advantage to the authorities of any city who may be studying the question of the disposal of civic waste to examine into the Decarie system, and also to see the plant in operation. Mr. Henry W. Atwater, 455 St. Paul street, Montreal, P. Q., is the manager of the Decarie patents.

## COMING MEETING OF ELECTRICIANS.

A meeting will be called soon of the executive committee of the International Association of Municipal Elecricians, at which there will be outlined a program for the next convention of the association. This convention will be held in Pittsburg during three days in September, 1900, 25, 26 and 27. It is expected to be the most important gathering of municipal electricians which has ever occurred, as a number of questions of the greatest importance in these days of electric fire alarms, patrol calls, etc., are to receive attention.

The executive committee will meet in one of the eastern cities, probably Philadelphia. It will consider reports that will be in by that time from the different municipal electricians of the United States and Canada, as to what they consider the most important problems that now confront the profession. These are being received in answer to a circular letter sent out by William Brophy, of Boston, Mass., who is the president of the organization. It was desired to have prepared a program this year that would draw together all electricians for their mutual benefit and advancement, and for this purpose the circular letter was sent out by Mr. Brophy, at the suggestion of Morris W. Mead, superintendent of the bureau of electricity of Pittsburg. President Brophy is superintendent of the bureau of wiring of Boston.

Mr. Mead is chairman of the executive committee of the association, and is one of the leading members, much of its success being due to his efforts. It was his work that secured the convention for Pittsburg, and on him will fall most of the work of making arrangements for the comfort and entertainment of the electricians while they are there. Mr. Mead says that, while as yet no definite arrangements have been made for the Pittsburg convention, there are a number of matters that will come up for discussion. Most of the municipal electricians want to hear exhaustive papers on topics of particular moment in their business, and for that reason there will not be a great number of papers, and those submitted will be prepared in a most careful manner, and after they are read there will be discussions, which is considered the best manner of getting the opinions of all, according to the views taken by the members of the executive committee. As yet only one topic has been decided upon. A paper will be read on "Contact Points" in all manner of electrical construction. The matter of contact points is now receiving much attention.

## OHIO'S TAX ON TELEPHONES.

The supreme court of Ohio, in a test suit brought by the state auditor against the auditor of Franklin county, decided that telephone instruments must be placed upon the tax duplicates of the various counties at a valuation based upon their earning capacity. Only the wires, poles, and other tangible property have heretofore been taxed. The decision follows the principle of one by the United States supreme court in what was known as the express case, where it was held that the earning power is the true basis of taxation where the property taxed is protected by patents.

The boxes owned by the Bell Telephone Company were taxed at a valuation of $3.42 each, and it was the contention of the state that they ought to be taxed at their net rental value of $160 per instrument. It is estimated that there are 25,000 instruments in use in Ohio, representing an earning capacity of $5,833,000 and putting the telephone companies on the same basis as the express or telegraph companies, the state will gain in taxes about $80,000 annually.

## PERSONAL.

—J. W. Ferguson is the new mayor of Wenatchee, Wash.

—Dr. W. G. Lewi is the new city physician of Albany, N. Y.

—C. A. Storke has been elected mayor of Santa Barbara, Cal.

—James E. Bell is the new democratic mayor of Everett, Wash.

—Thomas N. Hart was inaugurated as mayor of Boston on Jan. 1.

—W. P. Price has been elected mayor of Dahlonega, Ga., which was incorporated as a city last month.

—M. Z. Haven, formerly city clerk, has been appointed corporation counsel of Syracuse, N. Y., by Mayor McGuire.

—J. C. A. Branan, a former police commissioner of Atlanta, Ga., has been elected mayor of the lately incorporated town of Kirkwood, which is a suburb of Atlanta.

—Mr. Mo Hanf has been elected a member of the board of public affairs at Pine Bluff, Ark., to succeed Mr. L. E. Goldsmith, who resigned on account of ill health.

—Edwin A. Fisher has been appointed city engineer of Rochester, N. Y., by Mayor Carnahan. Mr. Fisher will retain as members of his staff Assistant City Engineer William J. Stewart and Chief Clerk George E. Hatch.

—Chief of Police Thomas Willard, of Albany, N. Y., was asked to resign on January 1 by the new director of public safety. The chief refused to resign, but consented to relinquish his keys and official authority under protest. Captain Robert Davidson, formerly in charge of the second precinct, has been made acting chief.

—Col. Fred C. Ham is the first commissioner of public safety of Albany, N. Y., having been appointed to that position by Mayor Blessing on Jan. 1. Under the new charter the commissioner of public safety is the head of the fire, police and health departments. Col. Ham is a lawyer by profession.

—Chief of Police I. W. Lees, of San Francisco has just completed forty-six years of service in the police department of that city. Since he was appointed to take the place made vacant by the resignation of Patrick Crowley as chief, he has inaugurated several changes in the department that have met with success. Chief Lees, when an important case comes to his department, supervises the gathering of evidence himself. In this manner he has worked up cases that have become famous all over the civilized world. The clever official has now one of the finest forces in the world under him, and it is being augmented every month. The new men who are going on the force nowadays are bright young fellows, and the chief is not overlooking their talants. The department was never so free of scandal as it has been for the past few years.

—Theodore S. Pulver, Rochester, N. Y., formerly city clerk, has just been chosen to fill that position by the new administration. At the breaking out of the Spanish-American war Mr. Pulver relinquished the same position to go to the front, where he faithfully discharged his duties, from which he returned a captain in the United States service. The Rochester "Democrat and Chronicle," in referring to the matter, said: "Mr. Pulver's name was placed before the caucus by Alderman Judson, of the eighteenth ward, and no other name was presented or candidate considered. No time was wasted over the matter after it was reached and the thing was done unanimously. Many citizens were anxious that Mr. Pulver be accorded a nomination on the city ticket last fall, and probably no appointment yet made by the new administration will prove more popular than this."

—The Thomson Meter Company have sent to their host of friends throughout the country a most useful souvenir in the shape of a neat and novel stamp book.

# PAVING AND SEWERS.

## MILLIONS FOR CITY IMPROVEMENTS.

### Progressive American Municipalities Preparing for Miles of New Pavements, Sewers, and Other Works.

### Forecast for the New Year Made By City Engineers and Public Works Officials of Many Cities Throughout the Country.

That the year of 1900 will be an active one in the line of municipal improvements is assured. This paper has interviewed public works officials in a large number of cities, in all sections of the country, for the purpose of ascertaining what municipal improvements were contemplated for the new year. In some cities it is too early in the year to make a forecast of the season's work, as appropriations have not yet been made and officials prefer to make no statements in anticipation of the making of the annual budgets by councils. However, in the cities where financial matters are definitely or even tacitly settled, the city engineers have no hesitency in speaking of their plans for the season's work. It appears from the interviews printed below that the paving, sewer and other public work for 1900 will exceed by many millions of dollars in cost that of any year during the past decade.

BUFFALO, N. Y.

F. V. E. Bardol, chief engineer, department of public works.—In Buffalo proceedings are under way for the repaving of eighty-two streets during 1900, the estimated amount of work being 400,000 square yards. This will include all streets, mostly stone, which are beyond repair. On each contract bids will be received for all kinds of pavement for which specifications have been filed with the board of public works, after which the property owners petition for the kind desired. At present the mileage of paved streets in Buffalo is as follows: Asphalt, 218.79 miles; stone, 102.37; brick, 7.53; macadam, 3.07.

As to sewer work plans are being prepared for the abatement of the Hamburg canal nuisance, and it is hoped to have the work completed before the time of the Pan-American Exposition in 1901. The estimated cost of this work is $705,873. About a mile of 14x16 feet sewer will be built, and in addition plans have been prepared for 4.31 miles of sewers varying in size from ten inches to five feet, the estimated cost being $44,801.

Other improvements include the abolition of railroad grade crossings, the construction of several bridges and the rectification of the Buffalo river, at a cost of about $1,000,000.

SYRACUSE, N. Y.

R. R. Stuart, city engineer.—Syracuse now has contracts let for pavements to the amount of $129,700 and for sewers to the amount of $73,610. This work will probably all be completed the coming season and with work still to be let the total amount of street and sewer improvements for the year 1900 will probably be $500,000.

KANSAS CITY, MO.

Henry A. Wise, city engineer.—It is impossible for me to approximate, in any satisfactory degree, the nature and cost of street and sewer improvements to be made in Kansas City during the ensuing year. Our expenditures during the year just closed were as follows: Grading of streets, $72,785; curbing, $105,809; cement and natural stone sidewalks, $196,134; other sidewalks, $42,365; asphalt paving, $672,725; brick paving, $159,434; sewers, $74,890; miscellaneous, $16,909; total, $1,341,055. Indications at present are that the year 1900 will equal 1899 in public improvements.

TOLEDO, O.

Willis Fletcher Brown, city engineer.—Toledo has already let contracts for paving approximately 117,139 square yards at an approximate cost of $224,750. In addition to this, legislation is now under way for ten or tewelve other paving contracts, and the total amount of paving to be done during the year will amount to about 200,000 square yards, to cost nearly $400,000. Most of the pavements to be laid will be vitrified block. About twelve miles of brick and vitrified pipe sewers will be built during the season.

There is also in contemplation the construction of a modern highway bridge across the Maumee river, from Jefferson street to a point in the vicinity of Oak and Second streets on the east side, the estimated cost of same being $500,000; also a bridge across Swan Creek at Lafayette street, to replace the old structure condemned about one year ago, at an estimated cost of $60,000.

CHARLESTON, S. C.

J. H. Dingle, city surveyor.—Appropriations have not yet been made for the coming year and no work has been laid out. A new water supply and an electric light plant are among the probabilities.

GRAND RAPIDS, MICH.

George M. Ames, city engineer.—It is impossible at this time to even guess at the probable amount of work that will be done by the city of Grand Rapids during 1900. The cost of the work contracted for last year amounted to nearly $275,000.

SOMERVILLE, MASS.

E. W. Bailey, city engineer.—There will be considerable work done during the coming year in the extension of the separate sewerage system and storm drainage outlets, the construction of streets and paving ,the relaying and extension of the water mains and the completion of parks and a boulevard.

The city of Somerville will be working under a new charter which went into effect January 1, 1900. This city of about 65,000 population has been sub-divided into seven wards and the city government is composed of the mayor and a board of twenty-one aldermen, the aldermen being elected two from each ward and seven at large. All public improvements will be carried on under a board of public works, consisting of the mayor, the city engineer, the street commissioner, the commissioner of public buildings, the commissioner of electric lines and lights and the water commissioner.

ST. PAUL, MINN.

O. Claussen, city engineer.—The public improvements made in St. Paul during the year 1899 were as follows: Thirty miles of wooden sidewalk, $44,457; thirteen miles of cement sidewalks, $15,013; 1.84 miles of brick pavement, $65,817; .71 of a mile of sandstone pavement, $36,510; .83 of a mile of asphalt pavement, $43,008; ten miles of sewers, $86,090; 6.4 mile of cycle path, $4,970; 4.23 miles of boulevarding, $34,849; 2.81 miles of grading, $12,210; total, $342,924. I am not prepared to say how much work in the various lines will be executed in the year 1900, but the expectations are that it will be considerably in excess of what was done in 1899.

PHILADELPHIA, PA.

George S. Webster, chief engineer, department of public works.—During 1900 we expect to expend for municipal improvements, under the charge of this bureau, $500,000 for branch sewers, $320,000 for main sewers and $850,000 for bridges. It is probable that the work of elevating the Philadelphia and Trenton railroad, for a distance of about three miles, will be undertaken by the Pennsylvania Railroad Company and the city jointly, involving an expenditure of over $2,000,000. Legislation is now pending for the expenditure of $15,200,000 for the improvement of our water supply.

SPRINGFIELD, MASS.

Charles M. Slocum, city engineer.—We do not get our annual appropriations made until springtime and the matter of improvements is left with committees of the city council to decide after appropriations are made. Consequently it

would be difficult to outline much at the present time. We do not begin to even discuss improvements until later in the winter.

NEW BRUNSWICK, N. J.

Asher Atkinson, city engineer.—New Brunswick will spend $15,000 on brick pavements in 1900. One mile of extensions to the separate sewer districts will be built, costing $5,000; also one storm sewer will be built at a cost of $5,000. About $3,000 will be spent to repair macadam roads.

BINGHAMTON, N. Y.

L. E. Monroe, city engineer.—An approximate estimate of our work for the coming season would be $25,000 for street paving and $15,000 for sewers. This does not include the cost of any extension of trunk sewers.

ELIZABETH, N. J.

W. H. Luster, Jr., city surveyor.—We have in contemplation about $70,000 worth of new paving and sewers for the coming year. The new pavements will consist of Telford, brick and rock asphalt. The sewer work will be generally pipe sewers, as our main trunk sewers were built some years ago. During the year 1899 about $100,000 were expended on sewers and pavements.

TROY, N. Y.

Martin Schenck, city engineer.—A new charter for the government of the city of Troy came into effect on January 1 and makes radical changes in all departments. It will be impossible for me to make a forecast of the improvements for the coming year, as I have no idea what the new city administration proposes to do.

DULUTH, MINN.

Thomas F. McGilvray, city engineer.—The following improvements are contemplated for the year 1900: About seven miles of combined swers in West Duluth, for which I am now preparing plans; repaving ten blocks of Superior street with brick, sandstone or granite blocks; repaving Michigan street and Fifth avenue south, with granite blocks; water works extensions amounting to about $300,000, and the installation of a middle servive system.

LAWRENCE, MASS.

Arthur D. Marble, city engineer.—It is impossible to anticipate the extent and character of street and sewer improvements in our city in advance. We have no board of public works and the various city improvements are ordered from time to time throughout the year by the city council, usually on petition.

TOPEKA, KAN.

F. L. Wise, city engineer.—I will say that Kansas, this year, is feeling her oats, or rather, her corn, cattle and hogs, and in view of the many and extended improvements all around us we feel rather backward in making any boast of our feeble efforts to aid Gen. Prosperity. In fact the General has his eye just now on Western Kansas, where the irrigating and building boom, which struck them some ten years ago, is awakening and putting new life into all schemes that are of merit, and the only fear we now have is that it may revive some that should stay dead.

But coming back to Topeka—the only people that are complaining are the bankers who cannot loan the money that is coming to them, and are obliged to send to the East to help out their distressed brethren who are not blessed as we are. Our share, or rather the amount that we will contribute to the prosperity fund in Topeka, is about as follows: Brick paving, $120,000; sidewalks, brick, $20,000; sewers, $50,000; bridges, $5,000; city hall and auditorium, $85,000. County work: Two bridges, $25,000. State work: Completing state capitol, $35,000; addition to insane asylum, $35,000. Private work: General building, $100,000. Total, $475,000

In addition to this, I shall have to prepare plans for new water works for 1901, to cost about $450,000. Let me add that we have pinned our faith to brick paving and sidewalks; we make our own brick and are told that we have the best brick paving in the country.

OMAHA, NEB.

Andrew Rosewater, city engineer.—The work for the coming year in the city of Omaha has not yet been tabulated and I can only give you the following approximate statement: About five miles of asphalt pavement, to take the place of wooden blocks, will be laid at a cost of about $170,000. One mile of brick paving, to cost about $22,000, and two miles of curbing to cost about $7,500, will be built. About $75,000 will be spent for concrete and brick sewer mains and about $10,000 for pipe sewers. In addition to this, a viaduct forty-five feet in width and about 1,500 feet in length will be built over the railway tracks on Sixteenth street by the Union Pacific and Burlington railway companies, the cost of the improvement to be about $185,000.

HOLYOKE, MASS.

James L. Tighe, city engineer.—The appropriations for the coming year are not as yet made; therefore I am unable to state with accuracy what the improvements will be. Some of the recommendations are as follows: A new bridge on Cabot street, a 20-inch cast iron sewer from Walnut street to Front street at a cost of $10,300, and about $25,000 worth of street paving.

## The Purification of Sewage.

[An address by W. Kaye Parry, M. I. C. E., delivered before the Dublin, Ireland, University Engineering Students' Society, December 8, 1899.]

Absolutely pure water is never found in nature, as we all know. It may not be always polluted in the sense in which the writer intends to use the word—that is to say, it may not always contain foreign matters the presence of which may be a menace to the public health. It will, nevertheless, always contain certain foreign substances, either in solution or suspension, and it becomes necessary, therefore, to understand the difference between these foreign matters and their relation to the suitability of the supply for dietetic or manufacturing purposes. The field of research which such an inquiry opens up is so wide that it could not be even sketched out in the limits of a short paper. It will be more profitable to focus our attention on one branch of the inquiry, and to put aside all questions relating to water supply in the ordinary acceptance of the term.

You are invited, then, to confine your attention this evening to an examination of the present position of the problem as it relates to this same water after it has been utilized in our dwellings and our factories, mixed with the washings of the roofs, the roads, and the yards, and has been delivered into the public sewers of the town. In this condition the dirty water is called sewage, and the disposal of this dirty water effectively is a matter of the greatest possible difficulty. A little consideration will enable you to appreciate some of the hindrances to success. Perhaps one of the greatest obstacles to effective disposal is the varying character of the liquid with which we have to deal. From the nature of the case it will be easily seen that the chemical constituents of sewage are not constant. The sewage of one town will be very different from that of another, and town sewage will differ largely from suburban or rural sewage. Some towns are fully water-closeted, while others are not. Some towns have great numbers of factories, while others have but few. As every manufactory turns out its own particular kind of dirty water into the city sewers, the sewage will vary in character according to the nature and extent of the industries of the city. In some residential suburban districts the sewage is purely domestic, but in other suburbs of a great centre the suburban sewage varies in character. For example, Hendon, near London, may be described as the metropolitan washhouse, and Hendon sewage contains abnormal quantities of soap and starch. On the other hand, Sutton, near London, is, perhaps, a purely residential district, and the sewage is of a simple domestic character. The area of milk supply for a great city has also a very direct bearing on the character of the sewage. Suburbs which include large creameries and dairies will produce a sewage containing relatively large quantities of caseine—a substance which rapidly undergoes putrefaction, and which is singularly difficult to deal with.

Nor does the difficulty end here. The sewage of a town will vary in character every day in the week. Sunday sewage will be a very different liquid to that of a week day. Washing day brings the soap down and produces altered conditions, while the operations of factories lead them to discharge certain trade liquids on particular days in the week. One day the liquid to be treated may be strongly alkaline, the next day it may be acid, and acidity and alkalinity have a direct bearing on successful purification. But the changes to be provided for are not merely diurnal, but hourly. The midnight flow is very different in character to that discharged at noon, and almost every hour brings some change. At Halifax, in Yorkshire, the writer has seen the sewage change color half a dozen times in a day. Sometimes it is a deep red, to be followed by a distinct indigo, varied at intervals by volumes of black inky water; these may be succeeded by a flow of a water which has a milky, opalescent appearance.

Again, meteorological changes bring rapid variations: dry weather sewage is more concentrated; wet weather more dilute. A thunderstorm carries down suddenly the scouring of the sewer inverts and the sweepings of the streets, and for a time this liquid is not only enormously greater in volume, but actually far more foul than ever the dry weather flow. When the flushing and scouring is over, when the roads, roofs and paths have been washed clean, and the foul accumulations have been scoured out of gully traps, drains and sewers, the character of the liquid undergoes a rapid and complete change, and it then comes down to the outfall in a highly dilute and almost innocuous condition.

From what has just been stated it is seen that the strength, character and quality of sewage is not constant, and it is not, therefore, always amenable to the same treatment. Scarcely less formidable are the difficulties attendant on the varying quantities which are discharged

at the outfall. In dry weather some kind of periodicity in the variation of flow may be established. The night flow is then less than the day flow, and generally more dilute. But as regards dilution, even this rule has its exception in the case of some large manufacturing centres, such as Bradford, where many of the factories are kept going night and day. Domestic sewage attains its maximum during the morning hours of the day, but if the outfall be at some distance from the town the actual time of maximum flow at the works will be later than the time of maximum discharge from the various house drains.

The greatest disturbing factor as regards quantity is, of course, the rainfall. Even where the separate system is in operation, and the surface water is, as far as possible, separate from the sewage, great variations must be looked for, because it is hardly ever practicable to exclude all the rain water from the sewers. In the vast majority of cases no such separation is attempted, and the sewers are expected to convey all the rain water to the outfall. It is quite usual in designing the capacity of an outfall sewer to make it large enough to carry a volume of sewage equal to twelve times the maximum estimated dry weather flow; and even this quantity may be exceeded. Practical men will appreciate the enormous difficulties which these variations involve in the design and manipulation of purification works. Not only must there be some adequate provisions made as regards tank capacity, but the works manager must be always on the alert to supplement his treatment so as to obtain a fair amount of purification, even when the quantity to be dealt with enormously exceeds that with which he is called upon to deal on a day when no rain falls.

One more disturbing factor remains to be mentioned. The theoretical dry-weather discharge calculated from the water supply is sometimes very largely augmented from other sources besides rainfall. Manufacturers frequently pump up large volumes of water from the river and from wells, and after being used for trade purposes this liquid is delivered into the sewers. Very often the water from the underground springs finds its way into the sewers, and causes a great increase in the quantity actually delivered compared with the theoretical discharge. In the town of Sheffield the water supplied to the town for all purposes is at the rate of 22 gallons per head per day. This would give a dry weather discharge at the outfall of 7,700,000 gallons per day, whereas the average daily dry weather flow at the works is over 17,000,000 gallons, or more than 9,000,000 gallons in excess of what it should be.

The evolution of the sewage problem has been productive of a plentiful crop of wearisome literature; yet it would appear that the growing section of the reading public which concerns itself with these questions still thirsts for information. The elementary stages have been relegated to the shelves of ancient history, and we look back with an assumption of superior wisdom to the days when the controversy raged hotly round the relative merits of lime, land, and lime and land, as the narrow way from pollution to purification. We remember the battle cries of the leaders in the early eighties, when the enthusiasts cried, "Follow Nature," and the chemists answered, "Follow us," while the engineers suggested "Follow both," whereas the ratepayers preferred to follow neither, but to wait and hope. Elsewhere the author has paid his modest tribute to the memory of one distinguished engineer, who was the first to put into practice the results of the researches of an equally distinguished chemist, and to demonstrate the value of systematic filtration, albeit the science of the day failed to elucidate the real agencies which effected the transformation. The man of to-day would fain have us believe that he is entitled to all the credit for recent results, because science has brought to light the existence of the active agents by which the results have been obtained; but may not a place be found for one who achieved similar results at a time when light was too dim to illuminate the agencies?

The writer can put forward no claim to be ranked among the favored few who have undertaken the laborious task of original research, he has been content to sit at the feet of a valued colleague; to whose labors he has ventured to invite the attention of all who desire to give honor where honor is due. It has, however, been his privilege to lend his aid in putting to a practical test the conclusions which were reached by no royal road, but which were the legitimate inferences from genuine scientific labors. Some are content to advance plausible theories to account for the results which they have either really achieved or which they pretend to have achieved. Others are not satisfied unless they are able not only to give the world their results, but to put to the proof the truth of every assertion which they promulgate, and to establish a complete chain of evidence of which no single link is missing, and the strength of which is able to stand the strain of the most unsparing criticism, and to bear the brightest light which those who search for fallacies are able to throw upon it.

Dr. Walter Ernest Adeney, of Dublin, of whose researches the writer proposes to give some particulars, has throughout his investigations pursued the inductive method, patiently building up from a solid foundation, keeping silence until he could substantiate his theories by evidence, and steadily working out each development to its legitimate conclusion. Let those who challenge the truth of this assertion pass in review everything which he has written, and let them point to a single passage which necessitates retraction or withdrawal, even when examined in the more perfect light of the most recent researches. In order to appreciate his labors, let us now proceed to review briefly some of the most modern methods of sewage purification.

We have long passed that stage in the progress of civilization when men were content to pour the filthy sewage of their cities into the rivers or on to the foreshore of their coasts. The legislature has intervened to protect our rivers from any further pollution, and, although the cleanliness of the seaboard has not yet been safeguarded by statute, public opinion has at last decided that if sewage has to be discharged untreated into the sea this can be safely accomplished only when the conditions are favorable, and even then it must be done under very carefully-considered restrictions that foreshore pollution may be avoided.

It would not be possible in the course of a short paper to attempt an historical review of the progress of knowledge in relation to the purification of polluted water. It is sufficient to remember that all the early attempts of chemists in this direction were unsuccessful. By chemistry the solid matters in the sewage could be removed, but the organic matter in the solution was not amenable to chemical treatment. On the other hand, when crude sewage was discharged on to the land the solids often clogged the pores, a high standard of purity could not be guaranteed, and it was not found possible to maintain the land in good condition save when the conditions were exceptionally favorable. Some very recent experiments of Mr. James Ashton, manager of the Wigan sewage farm, furnish valuable evidence on this point. Better results are secured by a combined treatment, which includes preliminary precipitation followed by land filtration. In thickly-populated districts it has been found very difficult to obtain a sufficient acreage of land for such a purpose without a prohibitive expenditure, and as the local government board has hitherto insisted upon some supplemental land filtration, no matter what preliminary treatment the liquid has been subject to, something approaching a deadlock has been reached in the case of a large number of manufacturing towns.

For more than twenty-five years it has been known that if land were allowed intervals of rest its capacity for purifying polluted water was almost indefinitely extended, whereas if it were not allowed to rest it became what is called "sewage sick." For the last fifteen years it has been understood that the beneficial action of land in the purification of polluted water is due to certain micro-organisms in the soil, called nitrifying bacteria, which have the power of attacking the organic matter in the liquid and resolving it into harmless inorganic substances and gases. In more recent times it has been proved that the recuperative power resulting from the intervals of rest was due to the effect of aeration, although chemists had declared that atmospheric oxygen had no direct action upon organic matter in polluted water.

Dr. Adeney was the first chemist in the United Kingdom who established conclusively by exhaustive researches that sewage can be purified by developing the organisms contained in the liquid. He proved that his development could be secured by a sufficient supply of oxygen. He also showed that in the presence of a sufficient quantity of dissolved oxygen the fermentation which took place in the polluted liquid was not accompanied by the evolution of any foul-smelling gases, emitting a putrid odor; but when the supply of dissolved oxygen was in the one case in the coarse filters and in sufficient, putrefaction was set up in the liquid, accompanied by the evolution of these gases. He further showed that if an inorganic chemical compound containing oxygen, such as nitrate of soda, were added to the polluted water it was rapidly reduced by the organisms, provided there were no dissolved oxygen in the liquid. If, however, the polluted water were sufficiently diluted with pure water containing dissolved oxygen the nitrate of soda was not reduced. Dr. Adeney demonstrated that the micro-organisms in any liquid require a certain definite supply of oxygen for their healthy life processes. In the presence of such a supply the fermentation proceeded without smell, the organic matter was successfully broken up and the water was rendered sweet and harmless. In the absence of a sufficient supply fermentation still went on, but it was of a putrefactive character. Bacteriologists at present divide these micro-organisms into two classes—viz., anaerodic and aerobic, the one class, which peptonise the organic matter, working best in the absence of air, the other class, known as nitrifying bacteria, requiring an abundant air supply. Perhaps it may yet be shown that this distinction is somewhat

artificial, and that the organisms are not so easily divisible, but that they are in one instance living under healthy and in the other under unhealthy conditions.

Dr. Adeney has established by exhaustive research that the bacterial fermentation of polluted water takes place in two distinct and well-defined stages, which he has called respectively carbon oxidation and nitrogen oxidation. He divides the polluting matter in solution in sewage into two groups: (1) Unfermented organic matter, and (2) fermented organic matter and ammonia compounds. During the first stage, or the carbon oxidation, to which he has also given the name of bacteriolysis, the organic matters alone undergo chemical changes. When this fermentation takes place under aerobic conditions the final products are few and simple—namely, carbonic acid, water, ammonia, and a relatively small quantity of organic matter in an altered form. This fermentation takes place comparatively quickly. The second stage—namely, the nitrogen oxidation—cannot commence until the first stage has been completed, and it takes place more slowly than the first stage. The products of the second stage under proper conditions are nitric acid, water, and relatively small quantities of carbonic acid. The organic matters which have undergone their first change in the first stage undergo a further change in the second stage, and they may, therefore, then be classed with the ammonia compounds.

The most important condition necessary to accomplish these successive oxidations is the supply of a sufficient volume of dissolved oxygen, because the organisms which accomplish the work will take up oxygen during the entire course of the operation. In the absence of a sufficient supply of oxygen the fermentation is of an entirely different character, and is best described as putrefactive fermentation. This is accompanied by the evolution of large volumes of sulphuretted hydrogen and other foul-smelling gases. It is in the second stage that the nitrates and the nitrites are formed, the presence of which is sure proof that the process of fermentation has been successfully completed.

The foregoing observations indicate the lines upon which the purification of a polluted liquid should proceed. The best method of procedure is still a matter of controversy, and the three leading ideas which have been embodied in the most recent works may now be shortly described. The uncompromising supporters of the aerobic theory proceed as follows: The polluted liquid is discharged direct, without any preliminary treatment, on to a filter composed of coarse burnt ballast. The suspended matter in the liquid is then brought into contact with the aerobic organisms, and it is said that it is broken down by them. Subsequently the liquid, after passing through the coarse filter, is conducted to a fine filter composed of coke breeze, sand, pan breeze or clinker, and the organic matter in solution is in turn brought into contact with the aerobic organisms, and in this way it is reduced to inorganic substances and gases. The effluent or filtrate, as it is called, passes out of the filter in a purified state and can be safely discharged into a watercourse.

Those who favor the anaerobic theory prefer to pass the liquid first into a tank, called a septic tank, which is covered, and from which air is excluded. They claim that the organic matter is more rapidly liquefied, or peptonised, in this manner, as absence of light and air is said to encourage the activity of those organisms which do not require oxygen, and the sewage is thus subject to the first stage of purification. Such a course of treatment must involve setting up putrefactive fermentation in the sewage contained in the tank. The putrid liquid after it leaves the tank is then passed on to fine filters, similar to those already described, and the process of purification is thus completed by the nitrifying bacteria.

The ardent exponents of both systems have maintained that by these methods no sewage sludge is produced and the expense of chemical treatment is saved. In both instances it is conceded that the filtering area must be properly proportioned to the quantity of liquid to be treated, and that the filters cannot be worked continuously, but must be filled, emptied and rested, in order that the aerobic organisms may supply themselves with atmospheric oxygen to enable them to do their work. The number of hours during which the organisms should be left in contact with the liquid under treatment is still a matter of controversy.

Sludge has always been the bugbear of the engineers in the treatment of sewage. It is difficult to handle, because it contains about 90 per cent. of water; it is not easily dried, and during the process of drying it sometimes becomes very offensive. In order to expedite the process of drying filter presses have been largely used, by which the great bulk of the water is removed. Thus ten tons of wet sludge will be reduced in this way to two tons of cake. This sludge cake contains about 50 per cent. of water when first produced, but it subsequently loses some of its moisture. It is of little value as a manure, and it is often impossible to dispose of it. If the farmers will not cart it away it is tipped on to some waste ground and dug into it.

The advent of the bacterial filter was hailed with acclamation, because it was thought that the sludge problem had been thus completely solved. But during the last two years doubts have arisen as to the possibility of getting rid of all the solids in this way. Average town sewage contains about two tons of solids in suspension in every 1,000,000 gallons of liquid. Half of this suspended matter is inorganic and half is organic. Assuming that the whole of the organic matter is amenable to the action of organisms and can be completely liquefied and broken down without leaving any residuum, we have still to account for one ton of inorganic matter contained in each 1,000,000 gallons. Even the most ardent biologists hardly dare to contend that substances of this character form suitable pabulum for microbes. If they are not affected by the latter, if they are not present in the filtrate, and if no preliminary separation is provided, they must be left behind in the other case in the closed tank.

One ton of solids in 1,000,000 gallons of sewage may not be a very great percentage, but if it be allowed to deposit at the bottom of a tank it cannot be completely separated from the water with which it is mixed. It has, therefore, to be removed as wet sludge, and in this condition it will contain at least nine parts of water for every part of solid by weight. This means that there will be ten tons of wet sludge to be disposed of from the tank for every 1,000,000 gallons of sewage purified. So far, then, the sludge bugbear will then confront the engineer.

When aerobic treatment without sedimentation or precipitation is adopted the inorganic matter must be left behind in the filters. After a time the pores of the filter will get choked and the filtering material will require renewal. The renewal of the filters is a very costly matter, for burnt ballast, coke breeze, clinker or other suitable material will cost at least 5s. per cubic yard, and, as very large quantities of the material are needed, the substitution of fresh material becomes a serious consideration. Some idea may be formed of the extent of the filters and of the quantities of the material from some recent reports of the most eminent engineers.

Mr. James Mansergh, M. INST.C.E., in a very recent report to the Sheffield corporation, recommends the introduction of bacterial filters. He is, however, evidently not one of the thick-and-thin supporters of the bacterial filters for the treatment of crude sewage. On the contrary, he recommends a large increase in the tank capacity; he advocates the continued use of chemicals for precipitation, and the introduction of filter sludges for the sludge. After the solids have been removed in this manner, he is of the opinion that three acres of filters will still be required to deal successfully with every 1,000,000 gallons of previously clarified sewage a day. These filters must be at least three feet in thickness or depth. As one acre contains 4,840 square yards, and three acres will contain 14,520 super. yards, which is equal to the same number of cubic yards when the filters are three feet deep. The renewal of the filters therefore, for the treatment of 1,000,000 gallons of sewage a day involves the removal of 14,520 cubic yards of old material and the introduction of the same quantity of new. Allowing 2s. per yard for the labor attendant on removal and disposal of the old breeze, and taking the new breeze at 5s. per yard placed in position, the cost of renewal for the three acres of filters will amount to over £5,000.

According to two eminent engineers who have very recently made estimates for other corporations in the North of England, bacterial filters cost some £5,000 per acre to construct. Three acres, therefore, to treat 1,000,000 gallons a day, will cost £15,000. Money for such purposes can be borrowed from the government at 3 1-4 per cent., payable in thirty years. Assuming that an annuity loan is granted on the above terms, the annual instalments to repay the principal and interest in thirty years amount to £5 5s. 4d. per cent. per annum, and the payments in respect of a loan of £15,000 amount to £790 per annum. As regards the life of the filters it is generally considered that they may probably require renewal every four years. We have seen that the cost of renewal for three acres of filters will amount to £5,082. Dividing this by four, we must lay aside a further sum of £1,270 per annum to meet the charge. Adding this sum to the annuity for the loan, we find that the total annual charge will be £2,060 10s. per annum per 1,000,000 gallons. To find the actual cost of purifying 1,000,000 gallons of clarified sewage a day we must divide the last figure by 365, and we then find that the purification costs £5 8s. per diem.

Referring again to the report of Mr. Mansergh on Sheffield sewage, we find that the quantity to be treated at Sheffield is over 17,000,000 gallons a day. According to the calculation just given, the purification of this quantity of previously clarified sewage would cost the ratepayers of Sheffield £35,000 a year. But if

Mr. Mansergh is correct in his assumption that the preliminary clarification must precede filtration through baterial filters, the total cost of treatment can only be ascertained by adding to the figures given above the cost of precipitation, sludge-pressing and disposal. Taking the actual cost at Manchester of similar work as a basis, it may safely be said that this clarification cannot be done for less than 40s. per 1,000,000 gallons. This would mean for Sheffield a further outlay of £34 per diem, or £12,-410 per annum, making the total cost of sewage treatment £47,410 per annum.

In their report to the Manchester Corporation, just published, Mr. Baldwin Latham, Mr. Percy F. Frankland and Mr. W. H. Perkins, junr., do not venture to recommend the passage of crude sewage on to the bacterial filters; but they are obviously anxious to avoid what ardent biologists regard as the reactionary policy of preliminary chemical treatment. Mr. Baldwin Latham and his colleagues therefore take refuge in recommending mechanical separation of solids by preliminary screening and by increased tank capacity with wier walls and scum boards. The author's personal experience leads him to believe that no mere mechanical arrangement will effectually separate the solid matters in suspension. Natural sedimentation takes place in some sewage owing to the presence of chemicals in trade liquids, which act as precipitants; but as a rule sewage will not part with its suspended matter by mere sedimentation, and the liquid will remain turbid, even if it is allowed to stand for several weeks. Mr. Baldwin Latham recommends a total filtering area of 85 acres to deal with an average daily flow of 30,000,000 gallons, so that the cost of treatment at Manchester will still be very heavy, even assuming that no chemicals are used; and it is also evident that the suldge difficulty has not been overcome.

It has been necessary to enter into these details to show where the weakness of the biological treatment of sewage by filtration is really found. One can hardly forbear a smile when one looks back upon the flourish of trumpets with which the advent of bacterial filters was heralded by that class of chemists and bacteriologists whose ideas never get further than a Winchester quart of water or a colony of organisms. The description of the third alternative way in which the services of micro-organisms can be enlisted in the treatment of polluted liquids has been intentionally reserved until the nature of the difficulties which attend the two other systems have been fully discussed. Bearing in mind the figures put before you it will be easy to make a comparison.

After twelve years' work at the subject, the writer and his colleague, Dr. Adeney, are still of opinion that the most economical method of treatment is to separate in the first instance the solid matter in sewage by adding a suitable precipitant, and then to complete the purification by the addition of an oxygen-carrying chemical to the clarified liquid. The purification of the sewage of the Dundrum Lunatic Asylum has been successfully accomplished on these lines for the last seven years, and the same treatment has proved uniformly successful wherever it has been applied. At first it was thought that the case of manufacturing towns some difficulty might be experienced, but after protracted trials at Halifax, in Yorkshire, dealing with 100,000 gallons a day, it was shown that no such difficulty arises.

More recently a complete plant has been erected at Northallerton, in Yorkshire, whereby the whole of the sewage of the town, amounting to an average of over 150,000 gallons a day, has been treated with excellent results. The cost both of the installation and the working at Northallerton will bear very favorable comparison with the most moderate estimate of the cost of treatment by filtration. At Northallerton the freight on the principal chemicals employed is rather heavy, but in spite of this the total cost of treatment does not exceed £3 per 1,000,000 gallons per day. It has already been shown that, on the basis of Mr. Mansergh's report, the future cost of treatment at Sheffield, including clarification and filtration, will be over £7 per 1,000,000 gallons per diem. Elsewhere this process, with which the names of Dr. Adeney and the author are associated, has been fully described. Those who desire to make themselves acquainted with it are referred to two papers read by Dr. Adeney before the Institution of Civil Engineers of Ireland, and two papers read by the author both before the same institution and the Sanitary Institute of Great Britain.

It is here only necessay to emphasise the fact that not only is the liquid supplied with oxygen to maintain the aerobic organisms in a state of healthy activity, but the very same principle is applied to the sewage suldge. The authors make use of a precipitant which not only carries down the suspended matter, but supplies it with an oxygen-carrying chemical in the shape of the brown oxide of manganese. The organisms in the heart of the sludge are thus enabled to obtain oxygen enough to prevent the occurrence of putrefactive fermentation. The sludge, therefore, never becomes offensive, but remains perfectly sweet. It need not be filter-pressed, because, owing to the absence of putrefaction, it can be air dried without causing a nuisance. When dry it can be carted away, and forms an excellent manure. At Dundrum the whole of the sludge produced is used in the garden. The same remark applies to the installations at Blarney Castle and the Chapelized police barracks, and at Northallerton a neighboring farmer is glad to take the sludge away from us as top dressing for his land.

One very remarkable illustration of the marvelous accuracy of Dr. Adeney's calculations must not be passed over in silence. From the considerations already mentioned, he pointed out in his paper, read before the Institution of Civil Engineers of Ireland in April, 1895, that it was possible to deduce from his researches the actual filtering area which would be required for the successful treatment of sewage. Knowing the volume of oxygen in atmospheric air, and taking the interstices or voids in a filter at one-third of the total contents, he stated that it was easy to calculate the filtering area which would be required for the complete purification of sewage, because the oxygen required is a fixed quantity, as his investigations showed. Taking a filter at 3 feet in depth, Dr. Adeney stated definitely that the filtering area should be at the rate of 44 square yards for every 1,000 gallons treated. This would give 44,000 square yards, or almost exactly 9 acres as the necessary size for the purification of 1,000,000 gallons of sewage a day, for one filling only, or 3 acres if the filters were filled three times. At that time the only practical trials in connection with filtration were those which were being conducted at Barking. This filter was filled and emptied three times a day. But the Barking filter was only 1 acre in extent, and as it received 1,000,000 gallons per day, the area of filters necessary, according to Mr. Dibdin, who was then chemist to the London County Council and conducted the experiments at Barking, was only one-third that which Dr. Adeney recommended.

If we now turn again to Mr. Mansergh's report to the Sheffield Corporation, furnished six months ago, we find that, in his opinion, the filtering area which is necessary is at the rate of 3 acres per 1,000,000 gallons treated per diem. This figure has been arrived at as a result of the practical trials which have been carried out between the dates of the Barking experiments in 1895 and the present time. But assuming a filter is used three times a day, this is exactly the area which Dr. Adeney has fixed from his researches, which had been carried on from 1890 to 1894, and which were first published in the Scientific Proceedings of the Royal Dublin Society in 1895, so that at last, in the present year, the English engineers and chemists have to admit that the acreage absolutely necessary is precisely that which our fellow-citizen had fixed five years ago.

It may perhaps be interesting to note that when the author first commenced his experiments, in 1887, he used an apparatus patented by a Mr. Hartland, which embodied two of the principles which have since been so strongly insisted upon by the modern school of bacteriologists. Dr. Adeney and the writer soon determined to discard this apparatus in favor of the methods which they were convinced would yield better results. A description of the apparatus in question was given by the writer in a paper which he read in 1888 before the Institution of Civil Engineers of Ireland. The two principles to which reference has been made are—first, the preliminary passage of the sewage through a closed tank from which both air and light were excluded and the subsequent passage of the liquid through a series of filters, aeration being secured by allowing the liquid to fall in finely divided streams through a closed chamber into which a blast of air was forced by suitable machinery. The changes which occurred in the liquid after its passage through the aeration chamber first led Dr. Adeney to believe that some biological action must be taking place.

His previous experience had satisfied him that direct oxidation does not result from mere aeration, and he was forced to seek for some other explanation for the remarkable change which such a treatment produced. The outcome of the researches then commenced has been the development of the methods with which his name and that of the author have been associated. The methods which they discarded in 1889 as imperfect are those for which the latter-day chemists and engineers claim entire credit. The tank used by the author in 1887 was in all essentials a septic tank, and although the filters which he then used were vertical, the essential principle of combining aeration and filtration formed the second stage of the treatment the use of which he then advocated. The authors have been often accused of being behind the times because they will not pretend that micro-oganisms can destroy sewage sludge, but it is just possible that in this case posterity may reverse the verdict and that the first may be last and the last first.

### Chicago Drainage Canal Opened,

On the morning of January 2 the first water was turned into the Chicago drainage canal and began to flow toward Lockport, where it falls into the Desplaines river, and thence through the Illinois and Mississippi rivers to the Gulf of Mexico.

The first work in this great enterprise was begun on "Shovel Day," September 3, 1892, on the rock cut below Lemont, on the line between Cook and Will counties, so that a little over seven years have been consumed in the entire work, involving an outlay of about $33,000,000. Over 80 per cent. of the entire work was done during the so-called panic period, and owing to this fact the entire cost of construction was reduced about $8,000,000. Indeed, the board of trustees and its engineers are unanimous in the belief that the work could not be duplicated under existing prices for both labor and material for less than $40,000,000.

The canal is of the minimum depth of 22 feet. The rock sections are constructed of a width of 100 feet at the bottom. All of the rock sections and five of the earth sections have now a capacity for a flow of 600,000 cubic feet of water per minute, so that when the population of the city of Chicago increases to 3,000,000 people the sections will still be adequate for all demands, consequently the only work then remaining to be done to fulfill the requirements of law and the necessities of the increasing population will be the mere work of shoveling and dredging to deepen and widen eight miles of the earth sections to conform to the rock sections.

The plan of the canal has been a great development, and many men can justly lay claim to having played a prominent part in this public work. The Hering commission under Mayor Harrison, the first, made definite recommendations for the disposal of Chicago's sewage by this method. Later on, a joint commission was appointed by the general assembly of Illinois to sit between sessions and formulate a bill for discussion by the thirty-first general assembly. This commission in January, 1889, presented to the general assembly at Springfield a bill drawn under its direction by John P. Wilson of Chicago which became the ground work for the present sanitary district act. After a protracted fight the general assembly finally enacted a law full of compromises and concessions. The sanitary district was organized according to the requirements of law, by an affirmative vote of the people within the district in November, 1890, and it comprises within its area 182 square miles. The sanitary district comprises forty-four square miles in Cicero and Lyons, which are not within the city of Chicago, but which latter, on the other hand, comprises fifty square miles in Hyde Park, Lake, Evanston, and Jefferson, which are not within the sanitary district. Consequently, while the city of Chicago contains 188 square miles and the sanitary district 182 square miles, there is really within the combined area of the two ninety-four square miles in which there is no community of interest as affecting the two municipalities.

The district has already issued $13,990,000 of bonds, all payable in currency, $8,000,000 being 5 per cent. bonds, $5,600,000 being 4½ per cent. bonds, and $350,000 being 3½ per cent. bonds, running from one to twenty years, except the 3½ per cent. bonds, which run for twenty years from their issue. Of the others, one-twentieth of the issue must be paid off and retired each year, and $3,200,000 have already been retired, leaving $10,799,000 now outstanding. Additional bonds to the amount of $430,000 will be retired January 1, 1900. These bonds have been sold at an average premium of about 1 1-10 per cent. The taxes afford a revenue sufficient to pay the interest on these bonds, to pay off and retire one-twentieth of the issue each year, and leave a surplus to apply upon the current obligations of the district incurred for construction.

The first year after the law was passed was consumed in attempts to agree upon a plan and a route for the canal. December 8, 1891, definite plans were adopted, so that in September following contracts were let and the first work of excavating was actually begun. Within four years 75 per cent. of the actual construction of the canal was done. In November, 1895, the following board of trustees was elected: William Boldenweck, Joseph C. Braden, Zina R. Carter, Bernard A. Eckhart, Alexander J. Jones, Thomas Kelly, James P. Mallette, Thomas A. Smyth, and Frank Wenter.

This board completed the work, and under its direction the gates were opened January 2.

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### Repaving of City Streets.

Chicago, with miles of worn-out street pavement, is without means for repaving. It was the custom in Chicago, during the flush times when realty values were on the jump, to tear up an old pavement and replace it with a new one at the expense of the owners of the abutting property. But in this day the abutting property refuses to stand the assessment.

The Chicago "Tribune" comments interestingly on a suggestion which appeared in its columns from Martin B. Madden, a former alderman. After observing that the pavements of Chicago are mainly "shreds and patches," Mr. Madden proceeds to consider means for obtaining the funds to improve and properly maintain them. He asks, "How would it do to ask authority from the next Legislature to levy an annual tax of 1 per cent. for street improvements?" Then he would modify the law now obtaining in Chicago so as to provide that while the first pavement of each street shall be paid for by special assessment, the cost of maintenance and future pavements shall be paid out of the proceeds of the 1 per cent. tax. The "Tribune" says on this point:

> The time will come, sooner or later, when the general principle stated by Mr. Madden will be accepted. When a street is paved for the first time the value of property is enhanced. There are "special benefits." It is right that property-owners should pay all or most of the cost of the work. But when that first pavement is worn out its replacement confers no "special benefits," though there is a depreciation or values if it is not replaced. The property-owner is not responsible for the wearing out of the pavement by the travel of the entire community, and hence cannot logically be called on to renew it. Court decisions are tending in that direction. The Chicago practice has been different. It was not so hard to pay for pavement after pavement while real estate values were advancing and while taxes swallowed up so small a part of the income of property. It is hard now to pay for a pavement, knowing that another one will have to be paid for five or six years later.

In New York city all repaving and maintenance charges are paid from the general tax revenue, special assessments being levied only for the first pavement, and Chicago might with profit follow the New York example.

### Syracuse Sewage Disposal.

Mayor James K. McGuire of Syracuse, in an article recently published by a local paper, said:

"An important problem in Syracuse is the question of sewage disposal. There is no question that the time must come when either the creek must be straightened or else abandoned as an open sewer. Something must be done to purify the sewage of the city. I have been informed that the creek is scarcely able to properly dispose of the sewage of a city of 50,000 inhabitants. The steady pouring into the lake of the sewage of a district which includes nearly 140,000 people is bound to be disastrous in the end. We are situated exactly the same as Columbus, O., which has been using a small river something like our creek and which, like our creek in the summer time, is wholly incapable of properly disposing of the sewage.

"The lack of fall from which our sewage system suffers renders it imperative for the sewers to be cleaned and flushed frequently. In order to prevent the escape of offensive odors, it might be best to immediately take up the question of building two great intercepting sewers, one on each side of the creek, and then find some method of sewage treatment, purification to be used at the mouth of these two great sewers. I am told that the vaportorial system is the best adapted for sewage purification. We have a number of good sewage experts in the country, and having adopted the plans of Samuel M. Gray, the famous Providence expert, we are in position to meet the sewage problem intelligently."

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## MEETINGS OF CITY OFFICIALS.

Clinton Rogers Woodruff, secretary of the National Municipal League, in his annual review of the work of that organization, says:

"When our city officials come together for consultation and conference concerning the interests committed to their care then indeed we have an evidence of an aroused interest in municipal affairs which is most promising. Imagine a meeting of city officials ten or fifteen years ago to discuss city affairs, and yet now not only have we a League of American Municipalities, but there are at least ten state leagues of municipalities all manifesting a marked degree of activity. In Ohio, Indiana, Illinois, Michigan, Wisconsin, Kansas, California, Connecticut, Florida and Pennsylvania we find the city officials meeting in annual session to debate municipal topics and to exchange ideas as to municipal administration. The evidence of municipal progress, however, is not confined to officials in office and their activity. The citizens of the various cities throughout the country have not been wanting in intelligence and comprehensive effort to promote municipal reform."

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## EIGHT-HOUR DAY IN MEMPHIS.

In Memphis, under an ordinance passed during the last year, city laborers are paid $1.50 per day for eight hours' work; and, without reference to the amount of pay, the city officials are prepared to assert that more work can be got out of the men during eight hours than during nine hours of labor per day. The men go about their work with more vim. It would seem also that good wages would conduce to better service, as it would permit of better living.—Memphis, Tenn., "Scimitar."

# FIRE DEPARTMENTS.

## The New Year for Fire Departments.

A number of chief engineers have written to "City Government" their anticipations for the ensuing year. Their statements are published below, and will be of general interest to fire department people.

WASHINGTON, D. C.

Chief Joseph Parris.—During the year 1900 three new houses will be built for this department, two of them to be truck houses and the other a chemical house. Two trucks and one chemical engine will be purchased and a force of thirty men, allowing twelve to each truck company and six men to the chemical company, will be added to the department. I have also in my annual report to congress submitted a recommendation and estimate for three engine companies and two truck companies, with quarters and apparatus for same. Congress has not as yet acted upon this estimate and nothing definite is known as to whether these additions will be allowed.

MINNEAPOLIS, MINN.

Chief J. R. Canterbury.—The improvements which the Minneapolis fire department will make during the coming year will include the changing of our fire alarm system from an automatic to a manual system, moving the same from Station A to the new city hall and installing a storage battery, at a cost of $13,000. The contract has been let to the Gamewell Company. We will also build one new house, to accommodate a steam fire engine and a combination hose and chemical wagon, at a cost of $10,500. Minor repairs to building will amount to $4,000, making the total expenditures for the year $27,500.

GRAND RAPIDS, MICH.

Chief Henry Lemoin.—I do not expect any improvements in the way of new apparatus and houses the coming year. Possibly an appropriation may be obtained for the erection of an engine house in the southeastern portion of the city, but if anything is done, the amount will be placed in the budget next June, spread upon the tax roll and collected in the fall.

WILKESBARRE, PA.

Chief Joseph W. Schuler.—We are now advertising for bids for the construction of a new engine house to accommodate a steamer, a hose wagon and a hook and ladder truck, with quarters on the floor above for the men. I am also recommending improvements in our fire alarm system. We have just put into service one new first class Metropolitan steam fire engine, which is drawn by three horses, and a new combination hose and chemical wagon.

BINGHAMTON, N. Y.

Chief Charles N. Hogg.—The question of establishing a new fire company on the west side of the city will be submitted to the taxpayers in the near future and if the vote is favorable for the improvement provision will be made for the construction of a first class house and for the purchase of a combination hose and chemical wagon for it. I believe it is the intention of the fire commissioners to equip the fire alarm system with a storage battery during the coming year, also to add several more street boxes to the system.

READING, PA.

Chief George W. Miller.—During the year 1900 we will add to our equipment two new combination hose and chemical wagons and a new Pompier live saving corps. We may make some other improvements but nothing positive can be said about them at present.

WORCESTER, MASS.

Chief E. L. Vaughn.—Worcester is building two new engine houses, one on Providence street and one on West Boylston street, to be occupied during the year 1900. I have asked for an appropriation for the purchase of four new hose wagons and one aerial truck.

LAWRENCE, MASS.

Chief Melvin Beal.—The city of Lawrence is building a new fire station at the corner of Ames and Providence streets. It will be equipped with a combination wagon and a company of three permanent and four or five call men. This is an addition to the present department. The house will be completed some time in March. No other changes of any note will be made.

HARRISBURG, PA.

Chief Lutz.—I have recommended to councils the purchase of two new steam fire engines, one to be placed with the Reily Hose Company and the other with the Shamrock Company and a new chemical engine. It is probable that councils will pass favorably on the recommendations. The alarm system will be extended by the addition of several new boxes and a quantity of new hose will be purchased.

RICHMOND, VA.

Chief W. G. Puller.—For the Richmond fire department there are many additions and improvements planned for the new year the most important being the establishment of a combination hose and chemical engine at the headquarters building. It will only be a short while before all of the companies will be equipped with similar apparatus. There will probably be some material improvements made in our fire alarm system, the various houses will be remodelled and many other minor improvements will be made.

COLUMBUS, O.

Chief C. J. Lauer.—While it is possible that many improvements may be made in the equipment of the Columbus fire department during 1900, the only thing definitely known is that we are to have a new trussed truck. All of our hook and ladder trucks, with one exception, have already been equipped with Seagrave trussed ladders.

CLEVELAND, O.

Chief J. W. Dickinson.—Director of Public Safety Hyman, on December 26, sent to the city council a report in which he recommended fire department repairs and improvements to cost about $205,000. The report was referred to the committees on finance and fire, and if the council allows the appropriation, the money will be spent for new steam engines, new houses and new equipment of all kinds, including extensive improvements in our fire alarm system.

ST. JOSEPH, MO.

Chief P. P. Kane.—The city of St. Joseph has purchased four lots for the fire department and during the coming year new fire stations will be erected thereon. We will purchase a few combination hose and chemical wagons, and about 4,000 feet of new hose.

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## Fire Fighting Appliances.

In a paper on "Practical Fire Fighting Appliances," read before the Pennsylvania State Firemen's Association, Herbert Heston of Philadelphia said:

First in order of practical fire fighting appliances comes the steam fire engine, built in various sizes to suit the area to be covered and the style of buildings to be protected, from the small engine of 300 gallons capacity up to the "Jumbo" of 1,500 gallons.

The steamer of to-day is either drawn by two or three horses or propelled by its own steam. Boston, Hartford and New Orleans are using horseless engines with good results. The horseless engines referred to are horses, and at large conflagrations have been of great service.

In cities with an extended water front of a larger capacity than those drawn by the fireboat plays an important part, with a capacity of playing through from eight to thirty-two lines of hose, and with its deck pipes, with from 2½ inch to 5 inch nozzles, a veritable deluge can be poured upon a fire on shipboard or in buildings, lumber yards, etc., located on the water front. It is also useful at large fires within reasonable distance of the water. Its lines of 3 and 3½ inch hose can be brought into service and with the inexhaustible supply of water at its command can remain in service for an indefinite period.

In connection with the service rendered by the fireboats on or near the water front the following cities have introduced auxiliary pipe lines operated by their fireboats:

Cleveland, O., three miles of 8 and 10 inch cast iron pipe, leaded joints, tested to 400 pounds, hydrants or plugs 200 feet apart, two 3½ inch hose connections with independent shutoff at each plug, overhead electrical connections from plugs to boat.

Detroit, Mich., five miles of 8 to 10 inch wrought iron pipe, tested to 500 pounds and supplied with air valves.

Milwaukee, Wis., seven and a half miles of 6 to 10 inch cast iron pipe.

Buffalo, N. Y., 6,200 feet of wrought iron pipe, tested to 500 pounds, dry system, four-way connections at plugs.

Boston, Mass., 4,000 feet extra heavy 12 inch cast iron pipe, plugs 200 feet apart, underground electrical connection with boat, wet or dry system.

Chicago, Ill., has a pipe line system in service in the lumber district.

It is a matter of record that these streams from fireboats, through auxiliary pipe lines, have done good and effective service at the distance of a mile or more from the boat, and the pipe line is not an experiment, but has come to stay.

An apparatus that has met with much favor is the combination hook and ladder and combination hose wagon. The former is a regular hook and ladder truck with the addition of a chemical engine tank and hose attached thereto, the latter a hose wagon with chemical engine attachment.

They have proven very efficient and often prevent heavy water damage. Many small fires are extinguished by the use of the chemicals on combination wagons, the chemical line being run into the building on fire by one or two men, while the balance of the company are leading off the large hose, making attachment to steamer and preparing to back up the chemical stream with a heavy water line if necessary. A large proportion of the small fires in cities are extinguished by chemical apparatus, either chemical engines, combination trucks, or combination wagons, and no fire depart-

ment is properly equipped without chemical apparatus, if it is only a few extinguishers.

The latest thing in chemical apparatus is the bicycle chemical engine, which is light, strong and compact, and can be driven by four men at a high rate of speed. For small towns and villages with good roads this would prove an efficient appliance.

There are several devices on the market for chemicalizing streams of water, either from a steamer, plug, or inside standpipe in building, adding to their fire extinguishing properties and tending to reduce the loss from excess of water.

The water tower and deck pipe attached thereto are important appliances in all large fire departments, for when a fire is beyond control and the firemen are forced to retreat from a building with their lines, the water tower can concentrate the streams from six engines and through a 2 or 2½ inch nozzle hurl this strong body of water into the upper stories, while the deck pipe can aid in taking care of the lower part of the fire.

One of the most important features of a well equipped, up to date fire department is the electric alarm system—one that is thoroughly reliable is absolutely necessary; for upon the prompt and correct sending and receiving of the alarm of fire depends the efficiency with which the department responds and gets to work.

## Modern Fire Fighting.

One of the most interesting and valuable articles on fire fighting ever published appeared recently in the Minneapolis "Journal." It is here reproduced in part:

An important factor in any large fire is the character of the contents of the building. The up-to-date fire chief is perennially prepared on this score. He makes frequent inspections of the large buildings of a city and on the instant should be able to tell what the building contains, the general arrangement of the interior and the character of the building itself. These points may influence his manner of attacking the fire very materially, and they often determine the result. This knowledge is a very significant part of his equipment for his trade and position.

Arriving at the scene of a fire, what are the problems confronting a fire chief in Minneapolis and how does he go to work to extinguish the flames?

Naturally the correct definition of the work of the professional fireman is to gain control of the fire at the earliest possible moment and extinguish it completely with the minimum of loss. Brains, experience, sagacity and lightning-like judgment in a fire chief and perfect training, discipline and fearlessness in the men of his command are the essentials to this end. To gain control of the blaze is the first move. This, in fire department parlance, means the restriction of the fire as nearly as possible to the actual point of origin. It is often the case, however, that the original point of fire is beyond control upon the arrival of the apparatus. Then the aim of the chief should be to keep it in check only and concentrate all effort on the saving of surrounding risks, rather than on the immediate fire itself. Inability to see this point has been the undoing of many a fire department head and resulted in serious unnecessary property losses. A lumber yard offers the best local example of this truth. Here the object is ever to "quarantine" the burning section and keep the fire confined to the narrowest limits possible by thoroughly wetting down the surrounding lumber. This principle, effectively carried out by present and past chiefs in Minneapolis, has been the saving of many a million feet of pine lumber in the yards of the local lumber barons.

Another important law in fire extinguishment is to bring the water to bear as nearly as possible to the actual seat of the fire and from the shortest possible range. The force of the stream adds greatly to the effectiveness of the water. Ignorant or careless pipemen will often continue to play upon certain portions of a fire and be wasting both water and effort, from the fact that they are not reaching the vital spot at all.

Ability to correctly locate the source of a fire is another essential in the primary education of a fireman. The term, "locating a fire," means in this sense the requisite and immediate knowledge to ascertain the actual point of the blaze in a burning structure irrespective of whether it has made itself manifest or not. A flue fire, for instance, may reveal itself a hundred feet distant from the actual seat of fire, and the real cause remain unextinguished after the fire is apparently out and the department has left the scene. Every Minneapolis fireman of any length of service has seen in his own experience, instances of this perversity in fires. Again, when a burning building is heavily charged with smoke and heated gases, it is not only useless but dangerous to start a stream until the fire is definitely located, and the crowding of men into such a building until an investigation has been made is considered in professional circles to be bad fire practice, as it unnecessarily jeopardizes the safety of the men.

Smoke is the one great foe that firemen have to deal with at the start of the fight. Leave out the item of smoke and it would be a picnic for firemen the whole year around. Smoke has a mean habit of dropping down close to the floor in a closed building, which makes it a very difficult thing to locate the fire and go after it when it is located. Some men stand the smoke better than others, and not infrequently there are those who are absolutely helpless to do efficient work in any degree of smoke. This is an important point in determining the value of a fireman, and there are those in the business who claim that a physical examination to determine this point should be rigidly insisted upon with every candidate for a place in a fire department.

So long as the men can keep at work in a burning building it is the invariable rule never to open it up to the air. When smoke makes further work in a building impossible, it is opened up from below, which drives the smoke upward, but at the same time fans the flames to fiercer efforts. In the case of a top floor fire, where the flames work through the roof, smoke is no factor and men can work without inconvenience and at their best.

Ability to determine at any time the progress of a fire is another fine point in a firefighter's equipment. Experience is the great teacher here. Your top-notcher fireman, it is said, will tell to a nicety the progress of the flames by the appearance of the smoke and the smell of the burning timbers. Intimately connected with this feature is a knowledge of where to draw the line on the water. This is an especially important point from the standpoint of the owner of the stock in jeopardy and the insurance men. Inexperienced men at the nozzles will do more damage to the contents of a burning building in half an hour than fire would do in twice that time. They will simply drown the fire out and the contents with it. The other class will stop the fire just as effectively and leave the contents of the building but slightly damaged. It is all a matter of judgment and training and the results testify to the calibre of the department head.

Then there is the problem of the safety of the men always to be kept in mind. What is the condition of the walls at successive stages of a fire? And how long can men be kept inside at their work without unnecessary jeopardy to their lives? If men go down to death under falling walls or sinking floors, to the directing head belongs the responsibility, and experience has shown that it is a heavy one in any community. It is for the chief to look out for the safety of his men, just as much as he does for the interests of the property in danger. As the competent commander in a battle will withdraw any portion of his forces when likely to be surrounded and cut off, so the prudent fire chief will keep sharp watch all over the field and order a change in position when danger threatens his men.

As fires go, a basement fire under ordinary conditions is the easiest proposition that firemen have to meet in the line of their duty. These fires are usually easily reached, and, if located before the fire has run up between the partitions, or stairways or elevators, can be speedily flooded and suppressed. But there are conditions when a basement fire makes an exceedingly stubborn problem to deal with. Take the basement stores, with oil or chemicals, for instance. Here is no easy task for the firemen. There is intense heat and constant liability to explosions, which may bring the building down on the heads of the workers, or suffocate them with the noxious fumes thrown off by the action of the water on the chemicals. It is always difficult to locate such a fire, owing to the dense smoke and great heat. If a man can get into the cellar and get to work before the fire has gained much headway in a basement, it is an easy task to extinguish it, otherwise look out for trouble.

A system of internal pipes, with outside steamer connections, capable of delivering large quantities of water, is a valuable adjunct to the services of the fire department at such a fire. Under the model system, in addition to a sprinkler attachment, the elevator openings, stairways and other openings to the floor above are protected by a double line of perforated pipes. When the pressure is applied from the outside, they form a water curtain at these points. An oil fire in a basement it is considered is best handled by the use of chemical solution of bicarbonate of soda and sulphuric acid. The ordinary stream of water, it is claimed, will turn to steam and only add fuel to the flames.

In the case of department stores, fire authorities take the ground that no such building should have an era of more than 5,000 square feet without a fire wall. There have been cases where there was ten or more times this area, stocked with inflammable goods, and after the firemen went home there was not enough left of the building and contents to make a respectable monument to somebody's blunder.

## Chief Eaton Interviewed.

Chief Henry J. Eaton, of Hartford, Conn., a veteran in the fire service, who is known throughout the country, was recently interviewed by a local newspaper.

"How does the method of fighting fires now excel that of years ago in point of efficiency?" asked the reporter. The chief grinned and said: "Well, I've seen the time when the foreman of a volunteer company sat on a hydrant until his company came up, while the other companies could do no work until they hunted up another hydrant. Again, modern fire apparatus with all the new improvements is in working order at a fire in the same time that the boys of an ancient 'Tub' would take in getting it out of the house. Then there was always so much monkeying to do before the scene of action was reached and much valuable time was lost. Not that the old companies did not do good work, for they did, and many lives and much property were saved through their efforts.

"Much improvement has been made in the local fire department and the citizens may well feel proud of it. The dicipline is good; it is governed by a board of commissioners who are at once capable and energetic. The officers and men of the department are practically free from that latent jealousy that spoils the regime in many cities. Of late years we have had but few large fires, and casualties originating from the same have been few.

"In these days the fireman is paid a good salary and by means of the firemen's protective fund is well provided for in case he is injured in the performance of duty; besides this, he also receives his salary. Possibly the men in these days, provided with every new device for fire fighting, are not placed in such a dangerous position as their forefathers, whose sole means of defense was an ax and a leaky hose. A stream of water can always be held steady, nowadays, for there is an even pressure continually behind it, while in the old days, if the boys failed to 'break her down' the water was apt to fall short. The chemical engines, which we have now, save considerable property, because the stream is directed upon the immediate source of the blaze, and such is its power that the fire is generally extinguished in short order, eliminating the damage from the tons of water poured on by the steamers.

"Companies nowadays do not have the fun that the old boys used to have. (At this recollection the chief smacked his lips and sighed.) Oh, no! They had no salaries then and so every company made a break to get at a fire first so as to win one of the premiums. There were no asphalt pavements then and the sidewalks were used. Anything that was in the way had to move or get moved."

## Pleads for Better Pay.

Chief Parris, of the Washington, D. C., fire department, makes a strong plea for an increase in the salaries of his force in his annual report. He says:

"This subject is one of vital importance. It has become almost a matter of impossibility to secure proper material to fill the vacancies which occur from

time to time. During the fiscal year just ended the police department has secured some of our very best men, and I know that there are many more who are using every endeavor to obtain positions in that department. The reasons are very easily understood. A policeman of the first-class receives $100 per annum more than the fireman, and should he remain on the force a sufficient length of time, and prove worthy, he will undoubtedly receive a promotion of the second class, the compensation of which is $280 more than a private of this department will ever receive, no matter what the length or faithfulness of his service may be. A policeman is not confined in any sense of the word as the fireman; he has more time at his home with his family, and his duties, though tedious and arduous as they must be at times, cannot be compared with those required of a member of this department.

"Again, mechanics are busily employed at their respective trades, earning more wages than is paid by the fire department, and they do not seem to desire employment of so hazardous a nature, consequently it is the exception in the present day to obtain good, all around intelligent men, who wish appointment on our force. It is only as a last resort, that they will accept a position, and when the first opportunity presents itself they resign. A fire department cannot be worked with inexperienced men, and if something is not done to attract desirable men, and after getting them to keep them, the department will in a very short time be seriously handicapped.

"It does not seem that the services of the members of this department are properly appreciated. If they were it would be unnecessary year after year to repeat the pleas and arguments that have been made. The increase amounts to but $27,708 and should be allowed."

### The Fire Service of Havana.

Fire Commissioner Scannell of New York, who has just returned from a short visit to Havana, says:

"The only members of the Havana fire department who are paid are the engineer and driver of each piece of apparatus, of which there are six. There are 600 firemen, for the most part merchants. When the alarm is given, they vault over their counters, take the first cab, and are off to the fire. The uniform is similar to that of the old New York volunteer force—red shirt, helmet and blue trousers. The department has two corps, municipal and commercial. I consider them excellent volunteers.

"There are no hook and ladder trucks, since Havana houses are one story high. Nobody sleeps in the engine houses except the engineer, driver, horses and mascot. The time of hitching up and getting out is thirteen seconds. They are able to make this time because the horses are stabled close to the engine and not in the rear. Fires are of rare occurrence, because each household has a separate building for a kitchen. The department is fully adequate to meet existing conditions. I have no intention of returning to Cuba, and while there suggested no changes in the department."

### Richmond Fire Department's Fine Showing.

Chief Engineer W. G. Puller, of the Richmond, Va., fire department writes to "City Government" as follows:

"Our department, of which every citizen is justly proud, has for the last year maintained its high standard and is now more efficient than ever. While all over the country the fire losses were greatly increased, yet in Richmond, while we had 287 alarms during 1899, our total loss did not exceed $50,000. This we consider something remarkable, as the total number of alarms responded to was about 15 per cent. more than in 1898 and the total loss was about 30 per cent. less. Last year we thought we had established a record, but from the above you will see that it is broken. The small loss of 1899 is due to the fact that our department loses no time in getting to fires, and furthermore, our fire officers are most careful in their inspection work, ordering all trash and other inflammable matter removed.

"The department consists of one chief engineer, one assistant engineer, one secretary, twelve captains, sixty-three permanent men and eighty-six runners and subsitutes, who are under the control of the board of fire commissioners, which is composed of the following gentlemen: John H. Frischkorn, G. W. Taylor, L. C. Jenkins, Joseph Levy, James R. Sheppard and Charles F. Taylor.

"The commissioners have maintained to a high standard the equipment of all kinds, besides purchasing a lot on East Main street and erecting thereon the most modern engine house in the city at a cost of over $7,000. This house will be occupied by Engine Company No. 2, and their old quarters, which are directly opposite the new house, will be used as a store house for the department."

### Schedule of Facetious Rules.

Here are the rules posted at fire department headquarters in Hartford, Conn.:

1. On entering the house please leave the door wide open or should you forget yourself and close it slam it like thunder. (Winter arrangement.)
2. Under no circumstances soil the door mat by wiping muddy feet on it, as we wish to accumulate dirt inside for a potato crop.
3. Put your feet on the table or apparatus. If we are engaged in conversation, it is your turn next, ask questions, swear a little, talk loud, tell how many years your father ran with Big Six, whistle; if this has not the desired effect, SING.
4. Never neglect an opportunity To Improve Your Mind if the house patrol is absent, sit on the desk or table, pick your teeth with the gold pen and read the private orders—more may be found in the right hand drawer.
5. Smoking is particularly agreeable. If you are out of poor cigars we will lend you a pipe and a paper of Yellow Kid tobacco.
6. Please expectorate on the floor; the spittoons are only for ornament and should not be soiled. Put your cigar stumps in the tumbler or ink-stand as we may wish to smoke by-and-by; throw your tobacca quids on the apparatus.
7. Don't hesitate to ask for a loan, the larger the better, but talk something else a half hour beforehand; time isn't worth a cent per year to us.
8. Persons having no special business with us, will please call as often as their health will permit and bring their dogs, or send a doctor's certificate in case of absence.
9. Don't fail to handle everything you see; put your hands on the paint or polished metal of the apparatus, as we have nothing to do but clean, and we do that for amusement only; anyway, put your hands on something when you go out and take a hat badge or coat with you.
10. In case of an alarm, howl fire, ring a gong or bell or towel, be sure and ring something. Yell at the horses, get in our way and then ride out of the house on our apparatus.
11. Tell the driver how to take care of the horses, he doesn't know that's what he's paid for.

N. B.—We have a burial vault in the basement for chronic fire house loafers.

CHIEF H. J. EATON.

### Chief Pomphret's Annual Report.

The annual report of Chief Engineer John E. Pomphret, of the Chicopee, Mass., fire department, says there were fifty-three alarms during the year, the estimated value of property endangered by fire was $645,775, and the total loss was $8,117. The apparatus of the department consists of one steam fire engine, one chemical engine, three hook and ladder trucks, one hose wagon, one exercise wagon and six hose reels. There are four horses in the service. There are 198 hydrants, for which the department is taxed $3,960 per year. More hydrants are needed and the pressure is insufficient. The chief recommends the putting in of a storage battery for the fire alarm system.

### Texas Firemen's Tournament.

The volunteer firemen of Texas will have a tournament at Austin on April 18 and 19. The affair will be managed by the firemen's executive committee of Austin, and all entries must be made on or before April 10. The program provides the following events: Hose company foot reel race, five entries, local companies barred from prizes, but may compete for time; first prize, $300; second prize, $150; third prize, $75. Hose company foot reel race, 100 yards with reel, scale ladder already placed and turn on water; first prize, $15; second prize, $10. Hook and ladder foot race, 100 yards to ladder, raise and scale ladder, two or more entries, open to all; prize, $50. Hose wagon race with horses, 500 yards and turn on water; first prize, $50; second prize, $25. Foot race, only one man admitted from any one company; first prize, $15; second prize, $10; third prize, $5; fourth prize, $2.50. Foot race, 100 yards, for chiefs and ex-chiefs, a prize of a suit of clothes.

### Fire Department Improvements.

Fire Chief Moore, of Los Angeles, Cal., in his annual report, shows that many improvements have been made in the department during the year just ended. Twelve new fire engine houses have been completed, and the department apparatus has been increased by the purchase of two first class Metropolitan Engines, two second and one third class La France engines, seven combination chemical and hose wagons, two service trucks, and 6,000 feet of hose. The intention is to place the department on a full paid working basis.

The entire expense of the department for the past year amounted to $104,320.11. The department, which numbers ninety-one men, responded during the past year to 355 alarms, of which 309 were actual fires and 46 false alarms.

The fire alarm telegraph during the year has been greatly improved, fifty boxes being added, making a total of 194 boxes in all.

### Fire Drills in Schools.

The custom of giving fire drills in the public schools of Baltimore is to be revived, and Professor Henry A. Wise, superintendent of public instruction, proposes to see that such drills become a regular feature of routine work in the schools. He has prepared a circular to all principals calling attention to the importance of the rule, and giving general instructions as to how it shall be carried out. This circular is as follows:

"Your attention is called to the resolution of the school board which requires each principal to fix upon a signal for the dismissal of school, and to practice the pupils in moving out of the building with order and promptness, so that in case it becomes necessary on account of fire, or for any other reason, the build-

ing may be cleared quickly and without disorder.

"When the pupils leave the building at recess, or at dismissal, practice them in moving out with the necessary promptness and order, being careful to use every means of exit.

"Occasionally, also, at other times, being careful not to create a panic, practice the pupils in clearing the building in an orderly and expeditious manner, as it would be necessary for them to do in case of fire.

"When these movements take place it is very necessary to assign a position and duties to each teacher, so that every one may assist in making the movement a success.

"Doors leading out of the building, and those offering communication from one department to the other, should always be kept unlocked during school hours."

### Albany's Annual Report.

The board of fire commissioners of Albany, N. Y., have sent their annual report to the council. During the past year the number of fires and alarms was 674, an increase of 132 over the previous year. The insured loss on real estate was $94,243.77. The insured loss on personal was $188,122.40. Total, $282,366.17. The uninsured loss on real estate was $9,081.15. The uninsured loss on personal property was $46,294.52. Total, $55,375.67. The total loss on real estate and personal property was $377,741.84.

### Bonner's Company Assigns.

Former Chief Bonner's enterprise, the Greater New York Fire Protective Company, has failed. The company was organized under the New Jersey laws, with a capital of $50,000, and when Chief Bonner retired from active service in the New York department he became the president of the new concern.

The company had about 250 subscribers, who paid $25 per year for the service, which consisted of fire alarm systems in the various buildings of the subscribers which were connected with the company's central station as well as with the city department wires.

In the event of a fire the company's employees furnished a patrol for guarding and removing the property in the building, and at the same time notified the owners, who were conveyed to the scene in the wagons of the company and passed inside the fire lines.

The company was organized on similar lines to the one operated successfully in Boston.

### Chief Swenie's Annual Report.

The report of Fire Marshal Swenie of Chicago, for the year 1899, will show:

The department responded during the year to 7,700 alarms, an increase of 1,100 over 1898. The value of property involved is estimated at $124,000,000, an increase of $32,000,000. Fires not only were more numerous, but more destructive than usual. In February four fires alone resulted in an aggregate loss of $1,375,000. The total loss by fire is estimated at $4,300,000, an increase of $1,700,000 over 1898. The total insurance involved was about $67,000,000.

The present fire department of Chicago includes eighty-six engine companies, twenty-seven hook and ladder companies, and two hose companies. There are four fire boats in service and one in reserve. Two new engine houses have been completed and two are under contract. A temporary hose company composed of men detailed from other companies occupies the engine house in Austin.

### Change in Albany Department.

By the provisions of the new city charter, which went into effect on January 1, the fire department of Albany, N. Y., passes into the control of the director of public safety. One of the first acts of the new director, Mr. Ham, was to ask for the resignation of Chief Michael E. Higgins, which was promptly handed in. At this writing no successor to Chief Higgins has been appointed, and he remains in command of the force temporarily.

### Chief Hale's Annual Report.

The report for 1899 of Chief George C. Hale, of the Kansas City, Mo., fire department, shows: Total alarms, 1,140. Loss on buildings, $272,641.38; on contents, $663,389.10; total, $936,030.48. Amount of insurance on property involved, $8,379,459.23. Increase of alarms over former year, 321; increase of loss over former year, $536,559.77.

According to the statistics of superintendent of buildings office there has been during the last twelve months permits for 1,152 new buildings, erected at a total valuation of $3,250,000. Hence the rapid growth in commerce and new buildings erected accounts for the large increase both in the number of fires and also the loss by fire.

### Modern Hydrants Needed.

Chief Croker, of the New York fire department, complains that the fire service is crippled by the continued use of many old-fashioned hydrants. He says: "There are a large number of hydrants of the old-fashioned sort, which freeze up whenever the thermometer gets low. Being antiquated and unprotected, these hydrants are the first to freeze. We began the new year with nine engines thawing out frozen hydrants. What is needed is the substitution for the old-fashioned hydrants of those of more modern make, which only freeze in the severest weather, and even then can in some manner be protected."

### Expense of Pittsburg Department.

The total expenditures of the Pittsburg, Pa., fire department last year amounted to $461,039, out of an appropriation of $480,000. Director Brown has asked for the same appropriation for the year 1900. The salaries last year were $337,133.27, but this will be increased by $43,196.10 this year. The increase in the force will be five captains, five engineers, twelve drivers and thirty-eight hosemen. These will not be employed all year, but will be appointed as soon as new engine houses are ready for occupancy.

CHIEF H. N. COOK.

**Hart N. Cook,** chief engineer of the St. Paul fire department, says: "'City Government' can always be found on file in my office, and is referred to as a record of facts. I find something interesting and instructive in every issue, not only concerning the fire departments, but all other departments of the municipal service. All city officials should read it and thereby promote the efficiency of their respective departments."


# Fire Department Machinery & Supplies

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**James Devine,** chief engineer of the Salt Lake City fire department, says: "I recognize in 'City Government' a publication that fills a long felt want among all persons identified with, or interested in, the affairs of municipal government. If the average city council would set aside thirty minutes of each session for its reading, the taxpayer would profit by the experiment. No city official should be without it."

CHIEF JAMES DEVINE.

### Springfield, Mass., Report.

The report of the Springfield, Mass., fire department for the year ended December 1, 1899, shows the following: Total valuation of property endangered by fire, $2,613,496; insurance on same, $1,856,625. Total fire loss, $345,320; insurance paid, $343,910. Number of fires during the year, 238.

### Alliance, Ohio, Fire Report.

Chief William Aungst, of the Alliance, Ohio, fire department, has submitted his report for the year 1899. There were forty-three alarms of fire responded to by the department, an increase of twelve alarms over the preceding year. The department traveled twenty-seven and one-half miles in answering alarms, laid out 7,750 feet of hose, worked forty-two hours on fires, used 138 gallons of chemicals in extinguishing fires, raised 565 feet of ladders, thirteen fires extinguished by use of chemical extinguishers, seventeen with water, one with dirt and two with pails of water.

The total loss on buildings and contents for the year amounted to $53,087, but $45,380 of this sum was lost in a single fire.

### Fire Department Notes.

—G. W. Adleman has been elected chief of the fire department at Lockport, Ill.

—A Gamewell fire alarm system is being put in at El Paso, Texas.

—J. D. Mennie has been elected chief of the Ishpeming, Mich., fire department.

—W. Taylor is the chief of the fire department recently organized at Woodhull, Ill.

—J. Clark has succeeded L. K. Harfold as chief of the fire department at Hillsboro, Texas.

—Dr. Caleb R. Layton is the chief of the volunteer fire department recently organized at Georgetown, Del.

—A paid fire department has been organized at Fergus Malls, Minn. The city council elected George Beardsley chief engineer.

—The eighteenth annual meeting of the Nebraska State Volunteer Firemen's Association will be held at Norfolk, January 16-18.

—Chief J. J. Wood sends us a copy of the handsome souvenir history of the Paducah, Ky., fire department, recently published for the benefit of the firemen's library in that city.

—The equipment of the Reading, Pa., fire department is as follows: Ten steam engines, five combination chemical engines and hose wagons, two Hayes trucks, seven hose wagons and two straight chemical engines.

—The New Orleans, La., fire department has put into service a new self-propelling steam fire engine. It was built by the Manchester Locomotive Works, of Manchester, N. H., and is of the Amoskeag pattern throughout. It is a double extra first size, and is one of the most powerful engines that ever came to that city. It is of the craneneck pattern, with platform springs. The engine will be used for heavy service in the business centre of the city.

—The last report of the trustees of pension fund of the Rochester (N. Y.) fire department shows that there was a balance on hand January 1, 1899, of $18,049.72. During the year the receipts were $7,027.88; total receipts $25,077.60. There was paid in pensions $1,575; leaving a balance on hand of $23,502.60. The increase during the year was $5,452.88.

## COMBINED REFUSE DESTRUCTORS AND POWER PLANTS.

[Abstract of a paper by C. Newton Russell, A. M. I. C. E., read at a meeting of the Institution of Civil Engineers, London, Eng.]

The total amount of refuse destroyed during a period of twelve months at the Shoreditch plant in London was about 26,000 tons, of which 92 per cent. was ordinary domestic refuse, and 8 per cent. trade refuse, consisting of straw, paper, etc. The latter was practically useless for steam raising. The plant consisted of six Babcock-Wilcox water tube boilers and twelve refuse furnaces of the Manlove-Alliot type, each boiler being placed between two refuse furnaces, the hot gases from which were led into the boiler tubes through short side flues, each boiler being provided with a special grate, on which coal might be burned if required. The refuse, on arrival at the works, was carefully weighed, and was afterwards shot, without sorting, into trucks which were raised by electric lifts (of which there were two) to the platform. On arrival at this point the truck, which was on wheels and fitted with an electric motor, was run off the lift, on the overhead trolley system, to any position where it was desired to empty it; the refuse was then tipped into special charging trucks, one of which was provided for each furnace, and which was operated from the top platform by means of chain gearing. The average amount of refuse received per day was 84 tons, delivered between 9 a. m. and 5 p. m., although as much as 140 tons had been received in one day. It appeared to be impossible in ordinary working to guarantee a regular supply, and it was advisable to provide means of storage to cope with extra large deliveries.

This difficulty was met at Shoreditch by means of a large rectangular iron storage bin fixed under the tipping platform, and holding about 60 tons of refuse. The lifts and trucks were operated entirely by electricity. Forced air draught was supplied to the fires by electrically driven fans, the pressure in the ash-pits being 1 inch of water. No coal or other fuel was mixed with the refuse, which burnt freely, the maximum temperature observed being 2,500 deg. Fahr., and the average, 1,500 deg. Fahr. Considerable inconvenience was experienced owing to cold air rushing into flues during clinkering operations, the trouble being to a great extent unavoidable, and called for a perfect system of dampers. The clinker residue amounted to 32 per cent. and was at present difficult to dispose of owing to the cartage from works to the outskirts of the town being high. The clinker was suitable for making mortar concrete, and, when ground and mixed with Portland cement, made excellent paving slabs. The works were managed on the eight-hour shift system, seven days per week. The feed water for the boilers was drawn cold from storage tanks by three-throw pumps, which forced it through economizers placed in the main flues, where it was raised to a temperature of about 200 deg. Fahr., depending upon the heat of the flue gases and condition of the economizer. The water was then forced upwards into a large feed water storage cylinder, 30 feet by 8 feet, fixed about 20 feet above the boilers, and was connected direct to the main steam line, and which was therefore at the same temperature and pressure as the boilers, which were fed directly from this cylinder by gravity, the water flowing into the boilers freely without any strain or racking action on the check valves. The steam generated in the boilers, at an average pressure of 140 pounds per square inch, was disposed of mainly by the engines attached to the electric generators, although a small portion of live steam was supplied for clothes washing purposes to the public baths and wash houses adjoining the electricity works; exhaust steam was also supplied to the baths and free library, which were entirely heated from the steam raised by the refuse destructor.

The average cost of burning the refuse during the second year of working, including four furnace men, two top men and one charge man, supervision clerks, etc., cleaners and yard men, repairs, stores and sundries, was 2s. 6.9d. per ton. The amount of electric energy absorbed in dealing with the refuse, including electric fans, lifts, trucks and lighting, was 4.98 Board of Trade units per ton per annum. A number of evaporative tests had been taken with the result that with one boiler and two refuse furnaces, it was possible, by the burning of ordinary refuse, to evaporate 2,888 pounds of water per hour, from and at 212 deg. Fahr.

The average calorific value of various tests was 0.99 pounds of water per pound of refuse. The heating surface of each boiler was 1,300 square feet; the refuse grate area was 25 square feet, and the coal grate area was 27 square feet. The total amount of energy sold by meter to consumers was 1,031,348 Board of Trade units, including 131,140 units supplied to the refuse destructor. The total amount of refuse burnt was 26,201 tons, and of coal consumed 1,344 tons (value $6,543.66). The item of cost per ton for interest and redemption of land and plant—not usually considered in connection with refuse destructors—was a matter for serious consideration, and in the case of the Shoreditch destructor plant—where land is very expensive—the charge worked out at practically 25 cents per ton.

## FIRST DEMOCRATIC MAYOR.

Albert M. Collett is the first Democratic mayor of Ironton, Ohio, which is this year celebrating its fiftieth anniversary as a municipality. He was elected last April, defeating John M. Coons,

ALBERT M. COLLETT.
Ironton, Ohio.

who had been mayor for twenty-seven years, by a majority of only four votes. Mr. Collett is 34 years of age and one of the leading business men of his city. He is making a splendid record in the mayor's office.

# DAILY NEWSPAPER EDITORIAL COMMENT ON MUNICIPAL AFFAIRS.

### Mr. Moss's Report.

[New York Times.]

The general impression made by the voluminous report of the counsel of the Mazet committee will be that it tells nothing very new, and that it presents what is already pretty well known in a desultory fashion and with a marked tendency toward partisanship.

The professed purpose of the committee to which the report is addressed is the exposition of facts showing the working of the present charter and the suggestion of changes required by the facts brought out. These suggestions as made by Mr. Moss are logical and are sustained by the facts. The principal one is that the mayor shall have the power of removing at any time the heads of departments whom he appoints and whom under the charter he can now remove only within six months after the beginning of his term of office. The object of conferring the power of removal either during a short period at the outset of a term of the mayor or at all times is obviously to secure responsibility, and this is most imperfectly done by the present arrangement. The mayor cannot enforce responsibility on men whom he cannot remove save during a few months, and the people cannot enforce responsibility either on the heads of departments whom they do not choose or on the mayor who has no real control over the departments. The loose, confused, and demoralized condition into which the city government has fallen under the actual system was amply shown by the mayor's own testimony and by the testimony of the various commissioners. It is simply impossible to tell from their own admissions who is accountable for the extravagance, imbecility, and jobbery that are shown to prevail. Clearly this would not be the case if the mayor had full power of removal. It would then be his interest as well as his duty to know what his appointees were doing, for their neglect and their misconduct would be brought straight home to him. The suggestion of a term of two years, with eligibility for a second, has both advantages and disadvantages. It is much less important than the one relating to the power of removal.

### Socialism and City Government.

[Chicago Post.]

The notion that municipal socialism or the extension of the industrial functions of cities is the only available remedy for municipal corruption, which was challenged in these columns in an examination of a magazine article on the trend in American cities, is also attacked in the London Spectator, whose views appear to coincide with those we have expressed. In Great Britain the movement toward the municipalization of public utilities has proceeded much further than in the United States, and the advocates of socialism continually point to the alleged successes of British experiments. It is not denied that public ownership under corrupt administration would be inefficient and costly, but the allegation is that it would be an improvement on the existing system, characterized by periodical and gigantic frauds and by deals between franchise grabbers and rascally officials.

It is this assumption which our intelligent and judicious London contemporary questions with considerable vigor. It points out, exactly as we did, that "if the root of municipal corruption remains untouched, "there is no reason to expect permanent benefit from lopping off the branches. What is the root? Not the existence of unscrupulous men who are ready to give bribes for betrayal of the public trust, and the fallacy of many excellent men is precisely in starting from the false premise that the essential thing is to remove the opportunity for giving and receiving bribes.

No, the root of municipal corruption, in the words of the Spectator, is "really the indifference on the part of the citizens which makes corruption cease to be secret." Were the citizens swift and emphatic in condemning bribe-givers and bribe-takers, in driving corruptionists out of public life, and were they always determined to elect none but men of character, ability and experience, the franchise-grabbers would find their occupation gone. They would have to offer equity and adequate compensation for every privilege sought. To quote The Spectator:

> The change we ourselves should look for from municipal socialism is analogous to that which has come over electoral corruption. The bribery of constituencies has taken the place in a great degree of the bribery of individual voters, and when cities take upon themselves the gratuitous supply of luxuries the party which offers most will be the popular party. Instead of private funds being used to bribe town councilors, public funds will be used to bribe the electors who return town councilors. Is it possible to convince the people of the United States that the true remedy for corruption in municipalities is a higher appreciation of honesty by the individual citizen? Already in America the man who is bribed is regarded with contempt. We hope for the time when as much loathing will be felt for the man who bribes. At present the latter is too often regarded as merely "cute" and "bright" and not necessarily the blackguard that he is.

The last remark is not strictly true. Our contemporary should have spoken in the past tense. But the principal point is clear and sound, that socialism would be no cure for corruption, but would merely change its forms. The only remedy is in the vigilance and aggressiveness of the honest citizens. It is for them to secure upright government, and under such government municipalization would be totally unnecessary.

### About Grade Crossings.

[Dayton, O., News. ]

It will be a most unfortunate circumstance if in the grade crossing project public officers bring delay in the plans by cheap demagoguery intended to bolster up ambitions that come with the animation of spring. It will be unfortunate for the city, as some time might be lost in the consummation of the scheme, and it will be most unfortunate for the councilmen who act so illadvisedly. It sounds well to say that "I will vote for Third street if to this enterprise is added a proviso to elevate tracks in my ward." The purpose of this is obvious, but it cannot be said for the gentlemen offering this proposition that they have a clear conception of the feelings of the people of even their own ward. It would be impracticable to take up the grade crossing matter as a general proposition at this time. We have no prejudice in favor of the Third street crossing, but we believe the start should be made there in order that an intelligent insight can be had into the situation. We will profit by the first step, and the crossings to be protected following the Third street improvement will have the advantage of added information and improved plans. The problem of abating the dangers of the grade crossings is not a simple one. It must claim the best scientific thought, it must be handled diplomatically if the city's share of the expense is to be reduced to a minimum, and the taxpayers will bear their portion with better grace if there is that conservatism which brings economy and good business arrangement.

### Municipal Reform.

[Boston Herald.]

We are inclined to believe that, in spite of the theoretic character of a great deal that is said and written on the subject, the cause of good government in our municipalities has made decided progress, and that conditions, instead of being worse, are really better now than they were some years ago. It is true that we are from time to time having brought to public attention instances of municipal mismanagement or municipal corruption. Illustrations such as the mismanagement of the Philadelphia water system, or the sale of the Philadelphia municipal gas plant, are brought to the attention of the country, and as the incompetency or rascality which characterizes them is manifested, one is led to believe that our local governments are now in a worse way than they ever were before. But we are disposed to believe that this conclusion grows out of the publicity that such proceedings now receive. If they had happened a few years ago, people would have shrugged their shoulders and said: "What more can one expect of such 'boodlers' as our aldermen and common councilmen are?" and with the shrug and comment would have let these affairs pass, while at the present time a flagrant instance of municipal jobbery is promptly exposed and advertised from one end of the country to the other.

### Competition in Public Services.

[Boston Herald.]

Judging by the arguments that have been made before the selectmen of the town of Brookline, an effort is making to turn public opinion toward the belief that, in the matter of street railway service, it is much better to have competing corporations than to have the service of a community performed by a single company placed under rigid supervision. When we had one gas company in Boston this was the plea which Mr. Addicks used as a means of obtaining entrance into this field, and he was followed up by the representatives of the Standard Oil Company, who advanced much the

[Continued on Page 24.]

# WATER DEPARTMENTS.

## Atlanta Water Department Report.

The report of President George W. Harrison, of the Atlanta, Ga., water board, for the year 1899, which has just been submitted to the city council, is an interesting document, from which the following is quoted:

"While, in a general way, the necessity, importance and value of a constant and abundant supply of pure water as a factor in the development of the material interests of a large and growing city is conceded, nevertheless it is true that it is not realized and appreciated by the public at large. Wholesome water is indispensable in the homes and business marts of the city, for the health of the people is a matter of vital importance. There is not an enterprise or an interest in the city that does not, in some measure, require water. Without an ample supply being instantly and at all times accessible, our justly prized and efficient fire department would be crippled and rendered almost useless. The destructive conflagrations in a sister city during this month were made possible by the want of water. Had the supply been ample their heroic firemen might have reduced the loss by many thousands of dollars.

"Permit us to call your attention to one simple fact, demonstrated by recent occurrences. Had the bond issue carried, Atlanta would have saved in cost of piping alone nearly the total sum of the bond issue, for the reason that we had a contract in the event the bonds had carried to purchase piping at about one-half of present price. Had the bond issue carried we could have supplied all needs for comfort, heat, sanitation, etc.

"The constant and rapid growth of Atlanta emphasizes the wisdom of the recent recommendations of the president and superintendent, that addition of another pump, battery of boilers and extension of the filter plant be provided. These improvements cannot longer be deferred without detriment and risk to the city.

"The superintendent, in his report, gives a detailed account of the operations for the year:

"In 1899 three miles and 1,091 feet of pipe were laid. This, added to the mileage of 1898, makes a total mileage in service of 108 miles and 3,775 feet. Of the pipe laid in 1899, 3,118 feet were of 3-inch, and 2,307 feet of 6-inch old astesian mains. By laying these mains the board was enabled to give relief to some of those who were suffering for water. There were filed in 1899 applications for over six miles of mains, which, added to those previously filed, aggregate twenty-five miles of mains petitioned for. The appropriation of $5,000 for mains in 1899 was less than for many years, and yet petitions for water were greater than ever before. The board needs $25,000, or more, for mains in 1900. Reliance on the issue of bonds should not be had. The council should act promptly. Should the bonds carry the $25,000 could be transferred to the general fund. The failure of bonds to carry in 1899 inflicted loss on the city, in the difference in the cost of pipe, not less than $75,000.

COST OF OPERATING PLANT NO. 1.

| | 1898. | 1899. |
|---|---|---|
| Wages | $6,648 50 | $6,908 50 |
| Coal | 5,064 04 | 5,975 62 |
| Waste, oil and supplies | 422 52 | 483 58 |
| Unloading coal | 10 00 | 94 75 |
| | $12,145 06 | $13,462 45 |
| Less coal sold employees | 59 50 | 52 25 |
| | $12,085 56 | $13,410 20 |

COST OF OPERATING PLANT NO. 2.

| | 1898. | 1899. |
|---|---|---|
| Wages | $7,872 39 | $7,900 85 |
| Coal | 5,180 83 | 5,711 87 |
| Unloading coal | 104 00 | 142 00 |
| Supplies | 475 91 | 500 00 |
| | $13,633 13 | $14,254 72 |

COST OF FILTERING.

| | | |
|---|---|---|
| Alum | $1,408 80 | |
| Wages of filtermen | 1,003 75 | |
| Waste water washing filters | 112 16 | |
| Cost of heating filter house | 19 00 | |
| Sand for Hyatt filters | 28 00 | |
| Sand for New York filter | 14 65 | |
| Cost of putting sand in filters | 13 10 | $2,595 46 |
| | | $16,850 18 |

Cost of filtering 1,000,000 gallons, 1898, $1.61; 1899, $1.29.

Cost of filtering 1,000 gallons, 1898, .161; 1899, .129.

Cost of pumping 1,000,000 gallons, 1898, $7.54; 1899, $7.14.

Cost of pumping 1,000 gallons, 1898, .754; 1899, .714.

"A new pump with a capacity of 15,000,000 to 20,000,000 gallons will be required in less than two years. It requires one year to build and set a pump. Additions to the filter plant for at least 3,000,000 more than the present one; additional reservoir capacity will be necessary before a great while, and hence it is suggested that it would be wise to give the matter early consideration.

"It also gives me pleasure to state that, everything considered, the department has seen its most successful year, the gross cash receipts having reached the splendid figure of $175,000, as against $5,270.69 in 1876. This is exclusive of its free service, which is estimated to be $115,000, or a total for 1899 of $230,000, as against $204,399.54 in 1898; showing a gain of $25,000.46 over 1898."

## New Jersey River Pollution.

The first report of the New Jersey State Sewerage Commission has been forwarded to Gov. Voorhees for transmission to the legislature. The report makes a thorough review of the conditions in New Jersey with respect to river pollution, and shows that some remedial action is necessary to ward off the effects of disease which result from germ-infected water. Under the law of last winter the commission only has a veto power on new sewerage systems which may be deemed injurious. It is suggested that the commission be given power to require from cities and towns already having sewerage systems measures which will prevent injury to the streams of the state and the owners of property along their banks.

Reference is made to the fact that plans were approved for a joint sewer for the towns of West Orange, South Orange, Millburn, Vailsburgh, Irvington, and a part of Newark to empty into Arthur's Kul after Summit had been included, and with a reservation that if future exigencies should make it necessary, the permission would be recalled or modified.

The practice which prevails in most cities of using sewers for both sewage and surface water is condemned as one that adds to the problem of disposing of sewage, but it is recognized that a change would involve great expense and cannot be radically enforced.

The report says that the purification of the Passaic river has been and is the greatest problem that has demanded the attention of the commission, but that it is a mistake to suppose that the condition is solely the result of the pollution caused by Paterson and Passaic. The lower Passaic river is little more than a tidal estuary, and the incoming tide meets the sewage of Newark, Orange, Bloomfield, Montclair, Harrison, and neighboring towns, driving it up the river to meet that coming down.

The report discusses various methods of disposing of the sewage that pollutes the Passaic. The absence of an appropriation to secure engineering or professional skill prevents the making of any specific recommendation. One of the plans suggested is that of a trunk sewer to carry all the sewage of the Passic to Newark Bay. This raises the question whether there is sufficient volume of water in the bay for the dilution of the sewage to a harmless condition. If there were no such question, a plan of dilution suggested is by means of a canal from Berry's Creek on the Hackensack meadows to the Passaic river, with automatic gates controlled by the tide, which would let out the sewage and let in clean water.

Another plan discussed is a trunk sewer extending beyond Staten Island into New York Bay. In this connection the expense and possibly the question of state jurisdiction are referred to as possible barriers.

The report then goes into some general recommendations, chief of which is that the commission should have power to pass upon complaints, and to conduct litigation and appear in court as complainant against violators of regulations for the purification of streams, and also have power to protect water supplies.

The report concludes with an interesting description of the different methods of disposing of sewage by treatment, filtration and otherwise, but says that no one method can be recommended as the best, since varying conditions may make one system good in one place and bad in another.

## Scarcity of Water in Brooklyn.

In the borough of Brooklyn, city of New York, it has become necessary to scare the householders into restricting the use of water in order to avert a water famine. The local newspapers have been printing stories designed, purposely or unwittingly, to convey the impression to the public that water had the same intrinsic value as lager beer, and in consequence the water faucet had been more carefully guarded than the beer spigot.

As a matter of fact the situation as to Brooklyn's water supply is serious, although no water famine is imminent. The Hempstead reservoirs, with a capacity of 1,000,000,000 gallons, is empty as a result of the drough which has con-

tinued from last summer through the fall into mid-winter. At this writing the reserve supply in the Ridgewood reservoirs has fallen to 181,000,000 gallons, which is being drawn from at the rate of about 10,000,000 gallons daily. The driven wells and springs yield about 85,000,000 gallons daily, and the balance of the 95,000,000 gallons consumed daily must be drawn from the reserve supply at Ridgewood.

The Ridgewood reservoirs were never intended to assist in supplying ordinary water demands, but were built to supply an emergency call in case of a great conflagration or an accident to any other important part of the water system.

While there is no danger of an immediate water famine in Brooklyn, there is no gainsaying the fact that it is necessary to provide extensive additions to the supply in order to meet even restricted demands in future years.

James Moffett, deputy water commissioner for Brooklyn and Queens boroughs, says:

"Long continuous rains would give temporary relief and warmer weather would stop some waste and postpone the famine, but we are down to the bottom now and all the water we can possibly store during the spring freshets will be consumed long before midsummer, and we shall again face a water famine if money is not expended in increasing our plant.

The completion of the twenty-eight-inch main, the repairing of the Milburn reservoir or the erection of a filtering plant at Springfield would help to tide us over a dry season, and either of these works, if completed, would give Brooklyn much more water. These and other recommendations have been made, and I can do nothing more than recommend."

### Mr. Kuichling Joins Our Staff.

Mr. Emil Kuichling, C. E., who has just retired as chief engineer of the Rochester water works, in which position he served ten years, has been added to the staff of consulting editors of "City Government." Mr. Kuichling will soon open an office in New York city, but for the present his address will be Rochester, N. Y. His association with "City Government," which begins with this issue, will greatly strengthen the paper as an authority on questions of drainage, sewage disposal and water supply.

Mr. Kuichling was born January 20, 1848, and has resided in Rochester practically all his life. He graduated from the University of Rochester, classical course, class of '68, but took during the course extra scientific and mathematical studies, and also a post graduate course, receiving the degree of C. E. in 1869. Then he entered the Polytechnic School at Carlsruhe, Germany, for a second post graduate course of nearly three years.

Early in 1873 he was engaged as assistant engineer in the construction of the original water works of Rochester, and remained in this position until 1885, when he was elected a member of the executive board, or board of public works, of that city. He served two and one-half years in that capacity and then resigned to make the preliminary surveys and plans for the large East Side trunk sewer of Rochester, being engaged on this work until May, 1889. Meanwhile he was employed as consulting engineer of the New York state board of health, from 1882 to 1891, during which period he was obliged to study very closely a great variety of practical problems of drainage, sewerage and sewage disposal and water supply, for numerous small cities and villages; also making in 1883-84 and 1889 two extensive tours in Europe for the purpose of studying, from personal observation, the best and most advanced methods in these directions.

In September, 1890, he was appointed chief engineer of the Rochester water works, where he remained until December 31, 1899, when the office was abolished by the going into effect of the new White charter. The new steel conduit and improved distributing system of the Rochester water works were designed and carried out under his direction. He has repeatedly been employed as consulting engineer for a considerable number of small works of water supply, sewerage, sewage disposal, drainage, water power, etc., besides being called as expert in numerous important litigations involving hydraulic questions.

### Syracuse Experience for Utica.

William R. Hill and Daniel Rosenbloom of Syracuse were among the speakers at a recent meeting of the Board of Trade of Utica, when the subject of municipal ownership of waterworks was under discussion. Mr. Hill recited the history, briefly, of the old and the new waterworks at Syracuse, pointing out the many advantages secured to the city through the change from private to public ownership. Mr. Rosenbloom, who is a merchant and a school commissioner of Syracuse, said:

I can corroborate all that Mr. Hill said about having a poor water supply heretofore. When we asked for extension in those days the company said: "We'll see you next spring." The conditions to-day are changed. When we want a mile of water conduit we go to the common council and they order it laid. We have now 157 miles of mains, out of 200 miles of streets. We have pressure at all points in the city. We can use water and use all we desire. The prices are even lower than Mr. Hill has told you. In our store, with sixty people, our water rate is 75 cents to $1 per month; before, the rate was $75 to $100 a year. The policy of the superintendent is to compel or encourage the use of meters. By this means our supply will be sufficient for thirty years. In the schools, in nine of our large buildings, the fans are operated by water power. In a few other schools, where the ventilating fans are run by electricity, we pay about $2,000 a year. On one of our poor streets the old company would not put in mains because the people were poor. The result was typhoid. Now there are mains in all the poor streets, and nine out of ten families use water. It is but $5 a year. The poor need this protection; the rich never drink plain water. Out of 20,000 buildings in Syracuse, 19,000 are owned by people worth less than $5,000 each. The bath room rate is so low that everybody has them.

For commercial advantages you must have water in plenty and cheap. In our place we run two elevators and an outside lift. Our highest rate for this is $57 per month, and the lowest $23. We couldn't hire an engineer for that to use steam for power. Since the new water supply has been put in our insurance rates have greatly decreased. At one time they were reduced 40 per cent. If you had treble the number of hydrants you would reduce your rate of insurance.

The city has a debt. New York and London have debts and always will have. A municipality is not a money making institution, and why should it not be in debt? Why should not a city like Utica bond itself for $2,000,000 to $3,000,000 to have municipal water works. The profits of our plant since it has been completed have been anywhere from $30,000 to $60,000 per year above operating expenses. This is used in making extensions. With a reduction of 40 per cent. in insurance rates and 50 per cent. in water rates, Syracuse has made money in the building of its water works. All the money earned goes back to benefit your city. People who own property and houses valued at from $800 to $2,000 will not oppose it; but some rich men will oppose it. They, however, will be benefited by getting better rents, as all are.

### An Eel in Filtered Water.

The New York state board of health gave the first hearing in the Rensselaer water case on December 26. The case was brought before the board by Governor Roosevelt, with whom the citizens of Rensselaer have filed complaints about the quality of water served to them by the Greenbush Water Supply Co. At the first hearing only one side of the case, that of the complainants, was presented. Mayor Lansing, City Physician Humphreys and other officials of Rensselaer testified that the water was unfit to drink and injurious to public health.

Dr. Humphrey told the board that he had received numerous complaints regarding the quality of the water and had called the attention of the local board of health to the matter. After considering the matter the health board had decided that it had no jurisdiction in the question, but approved the action of the city authorities in bringing the matter to the attention of the state board of health. He said that an epidemic of typhoid fever had been raging through the city during the current year. There were sixty-two cases of typhoid fever reported, of these fifty-two being reported by three of the eight physicians in the city. Dr. Humphrey took the ground that the worst in regard to the Rensselaer typhoid epidemic is not known and never will be, as some of the physicians hold that they are not obliged to report contagious diseases unless they saw fit. He though it would be well to have the state board of health explicitly define the physicians' duties in such cases.

Dr. Humphrey then gave a description of taking samples of water for analysis which were sent to the Bender laboratory. Speaking of his own personal experience with the Rensselaer "filtered" water he said that he had been called to the kitchen in his house to investigate the water pipes, the supply being almost shut off. Finally an eel came out of the faucet and fell into the sink. After this filtered eel had made its appearance the water supply was continued as usual.

The board will give the Greenbush Water Supply Company an opportunity to refute the aspersions cast upon it by the officials of Rensselaer at a date to be announced later.

### Wm. R. Hill Moves to New York.

William R. Hill, who for some years has been the efficient superintendent and chief engineer of the Syracuse water works, has been appointed chief engineer of the New York city aqueduct commission. In his new position Mr. Hill will be at the head of the engineering branch of the water department of the metropolis, probably the most important post of its kind in the world. That he is well fitted for the great work before him is proven by the unqualified success of his labors in Syracuse, where the model water system of the country has been built and put in operation under his supervision.

Mr. Hill has received hundreds of letters congratulating him on his new appointment. The following letter written by Hon. Peter B. McLennan, justice of the supreme court and formerly a member of the Syracuse water board, expresses the sentiments of all of Mr. Hill's friends:

My Dear Hill—I wish to congratulate you most heartily upon your appointment as chief engineer of the Aqueduct Commission. You are honored. The city of New York obtains the best possible service, and the

only loser by your promotion is the city of Syracuse and your many warm friends here. For your sake, I am delighted.

The position will give you an opportunity to even more conspicuously demonstrate your ability in your profession, and what is even more important, your absolute honesty and independence in the conduct of large and important enterprises.

I prophesy that you are to take a higher place in your profession than you ever dreamed of. You have the qualifications which enable you to control those with whom you come in contact instead of being controlled by them, and in such manner, with an honest, independent course, as is approved.

I need not say that I personally regret that you are to leave our city and that the hours spent together in the future must be so few, and I regret that pure and wholesome Skaneateles water is to pass from under your supervision.

You did your work well and the people of Syracuse are under many obligations to you for your faithfulness and fidelity to duty. I can only add that I wish you the grandest possible measure of success in your new field and assure you that if at any time I can do anything to further your interest you have but to let me know.

### Company Puts in Meters.

On the first day of the new year the Knoxville, Tenn., water company began charging all owners of office and business buildings for the amount of water consumed, instead of for the number of fixtures in use. Superintendent F. C. Kimball, of the company, in speaking of the change to the meter system, says:

"Whether or not the owners of the public buildings in this city will have to pay more for water under the new plan, than they did under the old, depends altogether upon the amount of water consumed by the occupants of such buildings. I expect that some will pay more, while others will pay less. The meter system is being introduced by all up to date water companies in many cities. It simply means that water is sold like many other commodities, dry goods or groceries, for instance. It is the only plan I know of by which an equitable rate can be arrived at for such buildings. Some of them, of course, use a great deal more than others. When the meter system is in force, all owners of such buildings will pay for the amount of water used and no more."

### Looks Like Confiscation.

The decision of the lower courts in the case of the Skaneateles Water Works Co. vs. the Village of Skaneateles, in which the palintiff sought an injunction restraining the village from building and operating an independent water system, has been affirmed by the New York court of appeals. The decision is in favor of the village, but Chief Justice Parker, in his opinion, says:

"It is the experience of all attempts to introduce water into villages and small cities that the number of individual patrons at the outset is very small because their houses are not piped, and they are without bathtubs and other appliances which go with the use of water supplied under pressure. The houses erected after the construction of water works are, of course, made ready for connection with the pipes of the company, but the old houses are brought in very slowly; many never come in, while a small percentage of the others are brought in each year as the owners find themselves able to enjoy the luxury afforded by the water system, or as they may be persuaded that the necessary expense ought to be incurred for reasons of health or comfort. This means in almost all cases losses for the first few years until a sufficient number of people have become patrons to put a plant on a paying basis. The theory of the defendant seems to be that the proper way to treat such a corporation as the plaintiff promoted in this instance, as it appears by defendant citizens, is to let it go on and build water works, losing money each year, while it educates the people up to the point of using the water until years have passed away and the plant has at last come to a paying basis, and then duplicate its plant and take over a paying business for the simple cost of the construction of new works, and it claims the permission of the legislature to take that very course."

### Baltimore's Water Supply Polluted.

Dr. W. Royal Stokes, bacteriologist for the city of Baltimore, has completed an examination of four samples of water taken from private streams which flow into the Loch Raven supply of the city's drinking water. Dr. Stokes labeled the samples as "very bad," and proclaimed the streams as being badly contaminated. In one case the report shows the water was so bad that five hundred thousand germs were actually found in a single drop. Dr. Stokes was almost overwhelmed by the discovery.

The examinations were made at the instance of the watershed patrol for the water board, which was recently directed by City Attorney Leon E. Greenbaum to secure, at least, ten samples of water from the various streams along the city's watershed, in order that he might have something tangible on which to prosecute property owners who refuse to abate nuisances, after receiving due notice from the water board, through Mr. Gideon P. Hopkins, chief of the patrol.

### New Water Company at Paterson.

The Passaic Water Company is likely to have competition in the business of supplying water to the people of Paterson, N. J. An ordinance granting a franchise to the People's Water Company to build and operate a water works system is now before the city council. The new company proposes to get its water from artesian wells, whereas the Passaic river is the source of the present supply. Former State Senator George Pfeffer, Jr., of Camden, is the prime mover in the new enterprise. He has successfully established artesian water plants at Camden, Stockton, Egg Harbor and Sea Isle City, and is confident of his ability to give Paterson an ample supply of pure water. The new ordinance provides that the People's Company shall provide free water to the city hall, the public schools and the hospitals, but no other compensation is allowed the municipality.

Since writing the above the franchise to the People's Company has been granted.

### Grand Rapids Water Report.

The report of the Grand Rapids, Mich., water department for the year ended April 30, 1899, shows that 8.39 miles of water mains were laid, making the total in the system 135.17 miles with 1,272 fire hydrants.

There was expended $35,580.69 on the construction of the works, making the total cost of the works to date, $1,385,748.95.

A reduction in the rates for metered water to consumers using less than a daily average of 200 feet had the effect of reducing the income from the sale of water. This reduction was made, believing it was just to the small consumers.

Additional meters have been added during the year, and it is the intention to proceed with the setting of meters until all services, excepting it may be those supplying residences, are metered. It is expected that this will result in reducing the amount of water pumped, and improve the service in those portions of the city where it is now at times deficient.

The engineer's report shows the daily average consumption to be 14,730,860 gallons.

The income from the water works for the year amounted to $92,297; the operating expenses were $49,473, and the interest on bonds, $39,125.

The number of services open on May 1, 1899, was 8,291.

### Municipal Water Scheme Defeated.

A special election was held in Pekin, Ill., December 12, 1899, on a proposition to buy the privately owned water works at a price not to exceed $113,000, and to levy a tax of 8 mills on the dollar for twenty-five years to provide for paying for the same.

According to the Pekin Daily Times for December 13, 1899, "No effort was made on the part of those opposed to the scheme to get voters to the polls. They relied upon the first of nature's laws, self-preservation, to induce taxpayers to vote, and enough voted to defeat the scheme."

In commenting upon this result the Times says: "If the council is in earnest about owning the water works, let them go to work and buy the plant and pay for the same out of earnings. It is a democratic plan, but they would better accept it, for it would greatly improve the present city administration to use a little democratic brains in managing city affairs, and not depend on the quality of brains that advised the calling of the special election of yesterday.

"When the taxpayers fully realize what they have escaped they never will quit congratulating themselves nor thanking those who called their attention to the danger they were in."

### Chicago's Annual Water Report.

City Engineer Ericson of Chicago reports that the water supply of 1899 has been more satisfactory than for years in point of economy of operation as well as in amount and pressure maintained. Chicago has consumed 109,515,400,123 gallons of water, or 150 gallons per capita daily. This has been done at a total cost for maintenance and operation of $501,994. The increase in pumpage over 1898 was 9,873,595,939 gallons, with a decrease in cost of $23,340.

There was laid a total of 50.8 miles of water pipe; 59,362 feet of mains were lowered; Hegewisch was supplied with city water. The total cost of repairs and maintenance of the water pipe system was $404,812.

The two reductions in water taxes in 1898 and 1899, amounting to about $430,000, resulted in a net revenue of only $200,000.

### Filtered Water and Typhoid.

Theodore P. Bailey, health officer of Albany, N. Y., in his annual report, speaks of the benefit of filtered water as follows:

"About October 1 our water supply began to pass through the several filters previous to being distributed through the water mains for general use. The decreased number of typhoid cases re-

ported indicates that filtering our water cleanses it of all typhoid bacilli, besides many other organisms deleterious to health. It seems almost certain that many of our cases came directly from our water supply. On investigating recent cases of typhoid reported in the latter months of this year, I find that the majority of those ill were using well water."

### Boston's New Water Commissioner.

General Augustus P. Martin is the new water commissioner of Boston. He was appointed by Mayor Quincy on December 23, just a week before the expiration of the mayor's term of office. General Martin will serve as water commissioner until April 30, 1901, filling out the unexpired term of John R. Murphy, who resigned in October to become a candidate for the democratic nomination for mayor.

### New Superintendent at Rochester.

George A. Hotchkin has been appointed superintendent of the water works at Rochester, N. Y., by the new commissioner of public works. The appointment is regarded as an excellent one, as Mr. Hotchkin has been connected with the Rochester water works for many years, and is thoroughly familiar with the system. For the past ten years he has been acting as civil engineer of water works construction. Under the provisions of the new city charter the Rochester water works becomes a bureau in the department of public works, of which J. Herbert Grant is the commissioner.

### To Increase the Capacity.

The street and water board of Jersey City, N. J., recently decided to notify P. H. Flynn, who holds the contract for the new water supply, to make the capacity of the plant 70,000,000 gallons daily instead of 50,000,000 gallons. This will make no difference in the cost of water so long as it is delivered by the company, but should the city decide to purchase the plant outright on completion, which it may do under its option, the upset price will be increased from $7,595,000 to $8,745,000.

### Water Works Improvements at Worcester.

John G. Brady, water commissioner of Worcester, Mass., writes that during the coming year his department will do considerable work in the line of additional storage reservoirs and improving the pipe system. Plans and specifications for the proposed improvements will be ready about February 1.

### Two New Filter Plants.

The O. H. Jewell Filter Co., of Chicago, report that they have secured a contract from Conneaut, Ohio, for one of their Jewell gravity filter plants. They report also that Dennison, Ohio, has just placed an order to increase the Jewell filter plant ordered in September last.

### Will Enlarge the Mains.

Superintendent Darwin Felter, of the Binghamton, N. Y., water works, says that about $10,000 will be spent during the coming season for putting in larger water mains and extending the lines.

The American Water Works & Guarantee Company, of Pittsburg, Pa., has purchased from the New York Filter Manufacturing Company, 26 Cortland street, New York, the New Orleans filter plant of 16,000,000 gallons daily capacity.

The American Water Works & Guarantee Company has already installed the New York Filter Manufacturing Company's various types of filter plants in some eight or ten of its water works in various parts of the country. The New York filter plant installed in connection with their water yorks plants at Hornellsville, N. Y., is of the same type as the New Orleans filters just purchased, and is now in satisfactory operation.

### Water Works Notes.

—The Continental Filter Company has opened branch offices in the Marquette building, Chicago.

—The Orange, N. J., council has voted to employ a consulting engineer on the work now being done on the new water works system.

—Judge McSherry, at Frederick, Md., has just decided that the city has a right to charge for water furnished outside the city limits and within the police limits, which extend three miles beyond the corporation boundary.

—The city of Norfolk, Va., for which the New York Filter Manufacturing Company recently installed a filter plant of 6,000,000 gallons daily capacity, has contracted with them for filters to purify 2,000,000 gallons per day additional.

—The New York Filter Manufacturing Company, of 26 Cortland street, New York, has recently received contracts from the towns of Danville, Pa.; Canton, Pa., and Rocky Mount, N. C., for filter plants to purify the town water supplies.

—The water commissioners of Saratoga Springs ,N. Y., during July, August and September placed 478 meters on private residences, etc., in that village. There are 3,000 consumers in the village and with less than one-sixth of the service metered a saving in pumping was effected in the month of October in this year of nearly 200,000 gallons daily over October of last year.

—The W. J. Clark Co., of Salem, Ohio, manufacturers of the well known "Quick-as-Wink" hose coupling, have recently obtained a patent on a coupling of the same outward appearance and way of working as their regular "Quick-as-Wink," but having an internal arrangement by which it is at once either a suction or a discharge coupling, or both. Their regular fire hose coupling of the "Quick-as-Wink" pattern has come into quite extensive use, and is highly praised by firemen and citizens in towns where it is in service.

*L. N. Case* says: "The coming of your journal is more than usually welcome among the many that I receive. I like its style, and I like better its independent and thoughtful consideration of all questions treated upon by it. I find in each issue some thing that is interesting and educational to myself, and that more than repays me for the cost of the subscription."

# Water Works Machinery and Supplies

**IF YOU ARE IN THE ABOVE LINE OF BUSINESS IT WILL PAY YOU TO ADVERTISE IN "CITY GOVERNMENT." YOU WANT TO KNOW WHY?**

**BECAUSE** "City Government" has more **friends and readers** among water works men than any other journal has.

**BECAUSE** "City Government" is **read and kept on file** for reference by its subscribers.

**BECAUSE** "City Government" reaches not only the superintendents and engineers, but the water commissioners, the members of water committees of councils and the mayors—who in some cities constitute the **purchasing power.**

**BECAUSE** "City Government," through its large staff of local correspondents and other advantageous connections, secures **advance information** on contemplated construction work, extensions and supply purchases, and this information is sent direct to its advertising patrons by private bulletin.

*Wm. R. Hill* says: "I consider 'City Government' a very valuable journal to all representatves and employes of municipalities. The information it publishes tends to promote enlightened and progressive public service in all departments.

# DEPARTMENT OF INQUIRY

The Editor of "City Government" will undertake to furnish, through this department, replies to all inquiries pertaining to municipal affairs sent in by subscribers. The names of inquirers will not be published in any case.

### License on Bicycles.

Do you know of any cities where bicycles are licensed?

In Indianapolis all bicycles, excepting those owned by children under 14 years of age, are licensed, the annual fee being $1. In Toledo a license fee of 50 cents a year is collected for bicycles, those owned by children under 15 years of age being exempt. In a number of cities bicycles are taxed as personal property.

### Ticket Brokers Under Bond.

Do you know of any city where railroad ticket scalpers are required to give bonds to secure their customers?

The city council of Hot Springs, Ark., recently adopted an ordinance requiring every railroad ticket broker to give a bond in the sum of $1,000. The ordinance gives any person who purchases a worthless ticket from a broker the right to sue on the bond.

### Value of Central Park.

I would like to know the area and the cost of Central Park, New York city. When was the park created and what increase has there been in the value of land adjoining it since its creation?

Central Park comprises 840 acres and was created in 1856. Its first cost (for the land) was $5,028,844, and the aggregate expenditures on the park since then, 43 years, amount to about $20,000,000. A conservative value of the park land today is $200,000,000. The tax value of the real estate in the twelfth, nineteenth and twenty-second wards, in which the park lies, in 1856, was about $31,000,000. At present the tax value of the same real estate is about $500,000,000.

### Indianapolis Street Railway Franchise.

I understand that a new franchise has been granted to the street railway company of Indianapolis by the terms of which the city derives considerable revenue. Can you inform me as to the exact terms of the franchise?

By the terms of the new 34-year franchise granted to the Indianapolis Street Railway Co., in April last, the company is required to pay to the city the total sum of $1,160,000—$30,000 a year for the first twenty-seven years and $50,000 a year for the remaining seven years. The payment of this sum is in lieu of all license or special taxation, but does not affect the liability of the company to general taxation. The contract also requires the company to pave between its tracks and provides many other safeguards to the city. You will find a thorough review of the contract in the July, 1899, number of "City Government."

### Stream Pollution by Sewage.

Our city now drains its sewage into the river and the towns below us complain of the pollution of the stream and contemplate legal proceedings against us. We will have to provide some other means for the disposal of sewage. Can you let us know what cities in the West have sewage disposal plants and what is considered the most successful method of sewage purification? We also desire to know what cities have recently been in litigation on account of stream pollution.

The work of sewage purification is comparatively new to this country, having been started probably not more than fifteen years ago, and most of the sewage disposal plants now in operation having been built within the last ten or twelve years. The pollution of streams by the discharge of sewage therein has been much more noticeable and damaging in the eastern states than in the western, on account of the more dense population of the eastern territory. Therefore, most of the sewage purification works have been built in the eastern cities. However, you will find sewage purification plants at Madison and Ripon, Wis., these plants being of the intermittent filtration plan. The city of Marion, Ia., has secured plans for sewage purification works recently, and may now be at work on the construction of the plant. The city of Champaign, Ill., has a plant for the partial purification of its sewage.

Most of the work of sewage purification in this country is done by the intermittent filtration method. You will find a brief outline of various methods of sewage purification, and other interesting matter on the subject, in the paper on "Sewage Disposal Problems" read by G. Everitt Hill of New York, before the last convention of the League of American Municipalities, and published in the October (1899) number of "City Government."

Among the cities which have recently been involved in litigation for the pollution of streams are Danbury and New Britain, Conn.; Jamestown, N. Y.; Paterson, Passaic, Summit and Madison, N. J.; Altoona and York, Pa., and Richmond, Ind. In all of these cases, we believe, the courts have decided against the cities, and in many instances judgments for heavy damages have been obtained. Two of these cities, viz., Danbury, Conn., and Altoona, Pa., have adopted the intermittent filtration method for sewage disposal. The cities in New Jersey are planning a trunk sewer to tide water.

In Massachusetts, New York, New Jersey and Ohio, the state governments have practically taken control of stream pollution, as state laws have been enacted requiring the approval of all plans for new sewerage systems by the state boards of health.

### Telegraph and Telephone Poles.

I desire to ask if you can inform me where I can procure a copy of some city ordinance bearing upon the subject of telegraph, telephone and electric light poles, or rather controlling the placing or erection of the same. Poles in our city used for those purposes are placed indiscriminately throughout the city, are of all sizes and shapes, and as you can readily imagine, present a very uneven and unsightly appearance. We desire to correct this abuse, and if you know of any city whose laws deal with the subject, except such as compel the placing of wires underground, I will esteem it a favor if you will enlighten me.

The enactment of an ordinance like the one printed below would undoubtedly have the desired effect in your city:

No person, company or corporation whatever shall erect or set up in any of the streets, avenues, alleys or other public places, or grounds, of the city of Peoria, any pole, poles or other means of support, from and over which any wires are strung and extended for the purposes of communication, or for any other purpose whatsoever, without first having obtained permission and authority from the city council so to do.

All poles set or erected under the authority of the provisions of the preceding section shall be under the charge and control of the commissioner of public works, subject to the provisions of the ordinances of the city of Peoria granting such privilege.

Any person, firm, company or corporation applying to the city council for permission to erect or set up poles as provided in section one of this article, shall accompany the application for such permission with a plat, on which shall be designated the public streets and alleys of the city desired to be used by the applicant for such purpose, which said plat shall be filed with the commissioner of public works, and be and remain the property of the city.

Upon the granting of the right by the city council to any person, firm, company or corporation to erect or set up poles in any of the streets, avenues, alleys or other public grounds of the city, all such poles to be erected or set up shall be placed at the outside edge of the sidewalk and next to the curbstone, or curb line, and the kind and character of poles, the length of the same, the manner in which said poles shall be maintained and kept, the purposes for which said poles may be used, and any and all such other terms and conditions as the city council may deem expedient, shall be fully set forth in the authority of the city council, granting any such permit or privilege, as aforesaid.

In case the said city shall change the width or grade of any street, sidewalk or alley where said poles are or may be placed, or when, for any reason, the city council shall direct the same to be done, the parties owning or controlling said poles shall remove and reset the same at such place and in such manner as the city council may direct, whether such provision is specifically set forth or not, in the grant of any such privilege.

### Municipal License Fees.

Will you please give me the schedule of vehicle and other license fees in force in the cities of Louisville, Minneapolis, Columbus, Syracuse, Providence, Indianapolis and Toledo?

The license schedule of the city of Louisville is so lengthy that it cannot be allowed space in these columns; a printed copy in the form of a 16-page pamphlet has been sent by mail to the inquirer. The city clerk of Minneapolis writes that the license ordinances of that city have been amended so many times, and are in such a complicated condition, that he cannot furnish a copy of same that would be of service in this instance. Columbus has but three license ordinances in force; one fixes a tax on hucksters of from $5 to $15

a year, according to the equipment carried by the huckster; one taxes transient merchants $20 per day for the first fifteen days and $15 per day for each additional day, and the other requires transient museums to pay $25 for each period of thirty days or any part thereof.

The license schedules of Syracuse, Providence, Indianapolis and Toledo are appended:

SYRACUSE, N. Y.

| | |
|---|---|
| Fruits and candies on street corners or in front of buildings, subject to permission of owners or occupants, fiscal year | $ 15 00 |
| Night lunch wagons, fiscal year | 100 00 |
| Middlemen, fiscal year | 10 00 |
| Fruits and vegetables from wagon or pushcart, fiscal year | 10 00 |
| Fruits and notions from hand pushcart, fiscal year | 10 00 |
| Fruits and notions from basket, fiscal year | 5 00 |
| Junk dealers, wholesale, fiscal year | 25 00 |
| Junk dealers, retail, fiscal year | 3 00 |
| Public billiard and pool rooms whose proprietors do not hold a liquor license, fiscal year | 10 00 |
| Public bowling alleys, fiscal year | 10 00 |
| Public shooting galleries, fiscal year | 10 00 |
| Retail oil peddlers, each wagon, fiscal year | 5 00 |
| Wholesale oil deliveries, each, fiscal year | 10 00 |
| Non-resident auctioneers, per day | 25 00 |
| (A non-resident auctioneer is one who has not been a resident of Syracuse for a period of one year or more.) | |
| Ice cream from hand pushcart or wagon, per season | 15 00 |
| Transient hucksters and fakirs, unless otherwise ordered by Committee on Police and Licenses, per day. | 5 00 |
| Police and Licenses, per day | 5 00 |
| per week | 15 00 |
| per month | 25 00 |
| Miscellaneous venders, including circuses, etc., amount to be fixed by Committee on Police and Licenses. | |
| Carts, fiscal year | 3 00 |
| Milk peddler, fiscal year | 5 00 |

PROVIDENCE, R. I.

| | Per year. |
|---|---|
| Billiard, bagatelle, pool and scippio tables | $ 25 00 |
| Each additional table | 15 00 |
| Bowling alleys | 10 00 |
| Fireworks | 2 00 |
| Intelligence office | 20 00 |
| Junk dealers | 3 00 |
| Night-soil | 1 00 |
| Pawnbrokers | 100 00 |
| Swine, each | 50 |
| Shows, first class | 1 00 |
| Shows, second class | 5 00 |
| Shows, third class | 10 00 |
| Shooting gallery | 10 00 |
| Taverns with bar | 200 00 |
| Taverns without bar | 100 00 |
| Victualling houses | 1 00 |
| Lunch carts | 50 00 |
| Vehicles | 1 00 |
| Inspector of steam boilers | 5 00 |
| Superintendent of burial of soldiers and sailors | 1 00 |
| Truant officer | 1 00 |
| Quarantine sentinel | 1 00 |
| Auctioneers, each | 50 00 |
| Undertakers, each | 1 00 |
| Weighers of coal and other merchandise | 1 00 |
| Constables with power to serve civil process, each | 50 00 |
| Constables without power to serve civil process, each | 1 00 |
| Railroad police officer | 1 00 |
| Inspector of milk | 1 00 |
| Police surgeon | 1 00 |
| Coroner | 10 00 |
| Weighers of neat cattle, each | 1 00 |
| Special constables under dog law | 5 00 |
| Special constables under tramp act | 1 00 |
| Viewer of fences | 1 00 |
| Inspector of kerosene | 5 00 |
| Pound keepers, each | 1 00 |
| Port wardens, each | 1 00 |
| Public administrator | 5 00 |
| Packers of fish, each | 1 00 |
| Inspector of pot and pearl ashes | 1 00 |
| " " Saleratus and soda | 1 00 |
| " " Chain cables | 1 00 |
| " " Beef and pork | 1 00 |
| Sealer of leather | 1 00 |
| Viewer of hoops | 1 00 |
| Surveyors and corders of wood, each. | 1 00 |
| Measurers and surveyors of stone, each | 1 00 |
| Inspectors and measurers of carpenters', masons', and painters' work, each | 1 00 |
| Measurers of grain, salt and sea coal | 1 00 |
| City weigher at the haymarket | 5 00 |
| Weighers of cotton, each | 1 00 |
| City gauger | 5 00 |
| Deputy city gauger | 2 00 |
| Appraisers of damage under dog law, each | 1 00 |
| Constable under bird law | 1 00 |
| Surveyor of lumber | 5 00 |
| Deputy surveyors of lumber, each | 2 00 |
| Game wardens, each | 1 00 |

INDIANAPOLIS, IND.

| | |
|---|---|
| Bicycles, except children under 14 years ..... per year | $1 00 |
| Circuses ..... per day | 100 00 |
| Theatre ..... per year | 100 00 |
| Other entertainments where admission fee is charged ..... per day | 10 00 |
| Peddlers on wagons ..... per year | 22 00 |
| Peddlers on foot ..... per year | 8 00 |
| Auctioneers ..... per year | 50 00 |
| Pawnbrokers ..... per year | 100 00 |
| Vehicle license fees, per year: | |
| On each wagon or truck used for hauling boilers, engines, machinery, safes or stone and drawn by four or more horses | $ 20 00 |
| On each wagon or truck used as above and drawn by two horses | 15 00 |
| On each wagon or truck used for hauling logs, lumber, brick or ice and drawn by two horses | 8 00 |
| On each wagon or truck used for hauling logs, lumber, brick or ice and drawn by one horse | 5 00 |
| On each omnibus drawn by four horses | 10 00 |
| On each omnibus drawn by two horses | 8 00 |
| On each tally-ho drawn by four horses | 10 00 |
| On each tally-ho drawn by two horses. | 8 00 |
| On each wagon drawn by four horses, and not used in the manner specified in Clause 1 | 8 00 |
| On each wagon or cart drawn by two horses | 5 00 |
| On each wagon or cart drawn by one horse | 3 00 |
| On each dray or truck drawn by two horses | 8 00 |
| On each dray or truck drawn by one horse | 5 00 |
| On each furniture car drawn by two horses | 7 00 |
| On each furniture car drawn by one horse | 4 00 |
| On each sprinkling cart drawn by two horses | 8 00 |
| On each sprinkling cart drawn by one horse | 5 00 |
| Hacks, or hackney carriages, cabs, barouches, buggies or driving carts, surreys and all pleasure vehicles using the streets: | |
| On each hack or hackney carriage drawn by two horses | $ 6 00 |
| On each barouche, coupe, rockaway, trap, cab or surrey wagon drawn by two horses | 5 00 |
| On each vehicle as in the foregoing number described drawn by one horse | 3 00 |
| On each family surrey drawn by one horse | 2 06 |
| On each horseless carriage | 3 00 |
| On each surrey or vehicle drawn by one horse and used for delivery or hauling purposes other than as herein described | 3 00 |
| On each driving cart drawn by one horse or pony | 2 00 |
| On each buggy used for riding purposes only | 2 00 |
| On each sulky | 2 00 |
| On each push or hand cart | 2 00 |
| On each bicycle, except those used by children under 14 years of age | 1 00 |
| On each one-horse vehicle, not before mentioned | 3 00 |
| On each two-horse vehicle, not before mentioned | 5 00 |
| On each three-horse vehicle, not before mentioned | 6 00 |
| On each four-horse vehicle, not before mentioned | 8 00 |

TOLEDO, OHIO.

| | |
|---|---|
| Astrologers, fortune tellers and those engaged in palmistry, per year | $100 00 |
| Keepers public dance houses, per year | 100 00 |
| Keepers public dance houses, per night | 10 00 |
| (By consent of Mayor). | |
| Pawnbrokers, per year | 100 00 |
| Circus, show or menagerie, first day. | 150 00 |
| Each succeeding day | 50 00 |
| Side show, concert, musical or minstrel entertainment, exhibiting freaks of nature or monstrosities, first day | 25 00 |
| Each additional day | 10 00 |
| Permanent place of business for above, per year | 300 00 |
| (Amateur performance for benefit of benevolent or religious institutions exempted). | |
| Theatre or concert hall (except such as come under section 13). | |
| Seating capacity 1,000 or more, per year | 200 00 |
| Three months | 75 00 |
| One month | 50 00 |
| One day | 10 00 |
| Seating capacity less than 1,000, one year | 150 00 |
| Three months | 50 00 |
| One month | 25 00 |
| One day | 10 00 |
| (By consent of Mayor). | |
| Shooting gallery, ball throwing game, cane racks, per year | 50 00 |
| Second hand dealers, per year | 12 50 |
| Intelligence or employment bureaus or offices, per year | 100 00 |
| Cleaners of vaults or catch basins, per year | 10 00 |
| Wagon peddlers, per month | 2 50 |
| Wagon peddlers, per year | 20 00 |
| Foot peddlers, per month | 1 50 |
| Foot peddlers, per year | 10 00 |
| Hucksters, per year | 50 00 |
| Exhibitions, first day | 3 00 |
| Exhibitions, each subsequent day | 1 00 |
| Dogs, male, per year | 50 |
| Dogs, female, per year | 1 00 |
| Temporary place of business for sale of merchandise imported into corporation, first 30 days | 600 00 |
| Each succeeding 30 days | 500 00 |
| Each sulky, per year | 1 00 |
| One horse cab or hack, per year | 2 00 |
| Two horse cab or hack, per year | 3 00 |
| One horse private carriage, per year. | 1 50 |
| Two horse private carriage, per year. | 2 50 |
| One horse cart, per year | 1 50 |
| One horse dray or truck, per year | 1 50 |
| Furniture car, moving wagon or van, per year | 4 00 |
| One horse baggage wagon, per year | 1 50 |
| Two horse baggage wagon, per year | 2 50 |
| Ice wagon or beer wagon, per year | 5 00 |
| Two horse wagon for hauling boilers, engines, safes, stoves, brick, lumber, logs or merchandise, per year | 5 00 |
| All other vehicles not before enumerated (except omnibus) drawn by one horse or mule, per year | 2 50 |
| Drawn by two horses or mules, per year | 4 00 |
| Bicycles, except children under 15 years, per year | 50 |
| Dairymen living without city peddling milk upon streets of city: | |
| Each one hose wagon, per year | 3 00 |
| Each two horse wagon, per year | 5 00 |
| Furniture wagons, one horse, per year | 2 50 |
| Furniture wagons, two horses, per year | 5 00 |
| Hacks, one horse, per year | 2 50 |
| Hacks, two horses, per year | 5 00 |
| Passenger wagons, one horse per year | 2 50 |
| Passenger wagons, two horses, per year | 5 00 |
| Express wagons, one horse, per year. | 2 50 |
| Express wagons, two horses, per year | 5 00 |
| Drays, one horse, per year | 2 50 |
| Drays, two horses, per year | 5 00 |

## Miscellaneous Items.

—Rockford, Ill., street cars have been vestibuled and provided with fenders, as ordered by the city council of that city.

—Rockford, Ill., citizens have started a movement looking toward a river front drive, along the beautiful Rock river, and a system of parks connected by the drive.

—The city treasurer of Rochester, N. Y., acts as treasurer of the police pension fund and reports that $5,776.31 has been paid to pensioners during the year closing December 31, 1899, and a balance on hand of $49,110.39.

—The city of Marshalltown, Iowa, will soon build about fifteen miles of cement sidewalks. The cost is to be assessed against abutting property. Bids for the work will be opened by the city council on January 8 next.

—The Okonite Company, always up to the minute in everything they undertake, have celebrated the New Year by sending out to their friends one of the handsomest calendars that ever came out.

### Daily Newspaper Comment.

[Continued from Page 17.]

same form of argument. The result has been so generally disadvantageous, both to the companies themselves and to the community, that it is now believed that it would be greatly for the interests of the city of Boston if there could be one gas company here held to a strict accountability for the service it performed.

If our water supply was under the control of private corporations, this same line of reasoning would be followed. If we had one water company, we should be told that we needed competing companies, and after we had submitted to the inconvenience of this form of competition the corporate interests would doubtless be merged on a greatly enlarged capital because of the needless waste of money in making the competing investments. In Boston we had some dozen years ago competing street car companies, with the result that our transportation system was deplorable. The cars belonging to the different companies running over the same line on Tremont and Washington streets, for example, "loafed" on each other, blocked each other, and in the end produced such inefficiency in the methods of transportation that the union of these various companies into one system was hailed as a most beneficent change. If at the present time the street car company having control in the metropolitan district does not do what it should, it can be compelled to, and cannot throw the responsibility for unsatisfactory service upon some other corporation.

It should be easy for any one to perceive that, if the street car system of Cambridge or Brookline or South Boston was now under the control of a separate company independent of, and possibly hostile to, the Boston Elevated Railway Company, the service into Boston and to all of the radiating points in the metropolitan district now traversed by the lines of the elevated company could not be performed for those who were confined to such a separate company with anything approaching the standard of speed or rate of fares that the patrons of the Boston elevated railway now enjoy. It is open to argument whether a system of transportation, like a water supply or gas supply, should not be a public monopoly—that is, under the ownership and control of the public authorities. But, whether so placed or not, all students of municipal development are aware that such undertakings are better carried on, from a financial and public standpoint, in the absence of competition. The theory that competition in public services that require the occupation of our streets is of advantage is invariably the argument of the promoter, who wishes either to crowd out somebody or to be bought off. Boston had an illuminating experience of this kind in the case of Mr. Addicks.

### The Eight-Hour Law.

[Atlanta Journal.]

Several states and a number of cities have followed the example of the federal government and constituted eight hours as the limit of daily labor in the public employment.

Several Massachusetts cities have recently applied the eight-hour law to municipal work of every kind. Several years ago the Kansas legislature passed an act which provides that eight hours should constitute a day's work for "all persons now employed or who may hereafter be employed by or on behalf of the state of Kansas, or by or on behalf of any county, city, township, or other municipality of said state." The law also required that not less than the current rate of wages in the locality where the work was performed, should be paid to laborers and other persons employed by or on behalf of the state, and that "laborers, workmen and mechanics and other persons employed by contractors or subcontractors in the execution of any contract or contracts within the state of Kansas shall be deemed to be employed by or on behalf of the state."

This law is rigidly enforced, as a recent incident shows. A contractor who was building a court house for Geary county required his men to work more than eight hours a day in order to finish his contract within the specified time.

The attention of the state labor commissioner was called to this fact and he caused the contractor's arrest. The latter was tried, convicted and sentenced to pay a fine. The case was appealed to the supreme court, but that tribunal sustained the court below. The Kansas statute is very sweeping. It provides that where any one works upon any article that is to be used in any public building he shall labor but eight hours.

In several states there is now going on agitation in favor of eight-hour legislation, but we have not heard that it is proposed anywhere to go to the extent of the Kansas law.

### Should Councilmen Be Paid.

[Seattle Intelligencer.]

The quesion has recently been asked whether or not city councilmen should be paid for their services. The matter is not a new one for discussion. It is a theme over which there has been controversy for years. There are people who believe a man is worthy of his hire just as there are those who think the true public-spirited citizen should serve the community without hope of financial reward. The one side holds that a man's time is worth something; the other that the honor of holding place is sufficient in the way of an emolument.

The problem ought to be solved by determining whether or not a municipality will get better service from its council if the members are paid. If a higher order of talent can be secured by employing a salaried council, then such a council should be maintained.

It is quite as important to have good men to enact ordinances as it is to employ competent agents to enforce those ordinances, and if it is right to pay one set of city officials, why should it not be right to pay another set which is intrusted with responsibilities quite as grave?

In small places the better class of citizens are not reluctant to give their services free, whether it be for the duties of a councilman or those of a fire engine or hook and ladder company; every man's efforts are at the command of the community, and as a result, the history of early government in American cities is a story of the public service of the more substantial citizens.

### Favors "White Wings" System.

Director Rice, of the department of public works, Cleveland, O., has reported to the board of control that he favors the introduction of the "white wings" street cleaning system. He estimates the cost at about $65,000 a year, whereas the amount now available is only $20,000. "If the city would have clean streets," says the director, "two things are absolutely necessary—a much larger appropriation and a change in the system. It is my firm conviction that some degree of civil service is necessary if we desire to reach high efficiency in this matter. We cannot secure proper results with a street brigade subject to an upheaval every two years. The organization should, in my opinion, be based largely on the New York experience, and protected by legislation."

### Advantages of Voting Machines.

The Indianapolis "News" thus summarizes the advantages of using ballot machines at elections: "There are no defective ballots in voting by machinery. There are no protested ballots. There are no ballots spoiled by ignorance or intention. No questions can arise as to whether a vote is to be counted or not. No vote can be changed. No fraud is possible, either on the part of the voter or the election officers. No delay is possible. The whole process is much more economical. The precincts can be large; the election officers fewer. Time and money are saved, and doubt and suspicion, ever a legacy of voting by the present methods, are ended in voting by machinery."

### A Pan-American Municipal Congress and Exhibits.

While making a municipal study of the city of Buffalo last April Mr. William S. Crandall, traveling editor of "City Government," suggested to Mayor Deihl that a "municipal congress and exhibit" be incorporated in the program for the Pan-American Exposition in 1901. The latter was brought to the attention of the executive committee, at whose request Mr. Crandall presented his plan in writing. Before doing so, however, he had interviews and correspondence with many of the leaders in the municipal world, among them being, Governor Roosevelt, ex-Mayors Low and Strong, Dr. Albert Shaw, Richard Watson Gilder, all of whom heartily approved of the plan.

Now, that Governor Roosevelt has recommended an appropriation for such a department in connection with the Pan-American, there is greater hope of its realization and we give an outline of the idea hoping that our readers will manifest sufficient interest to write to Director General W. I. Buchanan, Buffalo, N. Y., urging him to respond quickly to the Governor's overtures and insure the consummation of so desirable a proposal. "The new deparement," says Mr. Crandall, "involves a Congress, Exhibit and Published Report."

"THE CONGRESS.

"The Congress would cover a period of two weeks or more to which would be invited city officials and all specially interested in municipal reform from the cities of the Western Hemisphere, to be addressed by the best talent procurable, upon the practical questions and problems which confront the modern city. There are over 200 local organizations in the United States alone devoted to the betterment of city government and upwards of 100 national organizations whose aim is to improve the national civic situation. This, without doubt, would be the most attractive feature to both local and national organizations. It could not fail to make Buffalo the popular convention city for such organizations during the exposition. In my travels throughout the middle west, south and east during the past year, I have mentioned to mayors and others interested, the possibility of such a department in connection with the Pan-American and without exception the proposition met with hearty approval.

"By means of the stereopticon and pro-

jectoscope, the evening sessions could be used to graphically portray various social conditions in our cities and new possessions, and thus popularize the program thereby wielding a wider influence.

"The question of municipal ownership is at present exciting such wide-spread public attention that in justice to the large corporate interests involved as well as to the rights of the people, it should, and would naturally be much discussed in the Congress and form a prominent part of the information exhibit. In fact, the scope of the Congress should be all-inclusive of the civic problem with a careful arrangement of the program as to relative value of the various themes.

"THE EXHIBIT.

"The exhibit would be divided into two general classes: the first would include information and statistics relating to the systems of government, methods and expenses of administration from all the larger cities of this hemisphere, together with corresponding data from the more important cities of Europe. This would be graphically portrayed by means of charts, maps, rolls, large folio books and photographs. Striking comparisons, touching upon the various financial and sociological phases of the question would be made between cities of our own and different countries—such questions as relative indebtedness, tax-rate, valuation—personal and real, sanitation, expense of running the various departments, with the advantages and disadvantages of municipal ownership of public utilities. This could be so graphically set forth, in the manner described, that it would not fail to appeal to those specially interested in the study of municipal affairs and in no small degree to the average visitor who would come from a distance to visit the exposition. Designs for model city buildings would form an important part of the exhibit.

"The second part would be in concrete form. Pavements, for instance, would be included. These could be shown in their crude and finished forms, with the several ingredients and the machinery employed for laying and keeping them in repair. This would appeal to every city in the hemisphere. As an evidence, I will simply cite the freuqency with which committees from smaller cities visit larger ones for the purpose of obtaining a practical insight into the question of pavements—quality, expense, durability, etc.

"The many forms of apparatus employed in the fire, police, health, park, street cleaning, water and other departments could be attractively arranged so as to appeal strongly to the average attendant. It could be given an added interest by having some of the apparatus in operation. For example, the working of the Bertillion system for the identification of criminals, as employed in the police department, could be used with great effect.

"The exposition will, necessarily, have fire and police protection, hospital, apparatus for street cleaning and for the collection and disposal of garbage. Why not have them models of their kind? Much, if not all, of such apparatus could be obtained without expense to the administration by granting concession privileges.

"THE PUBLISHED REPORT.

"By no means the least valuable contribution to the study of civic affairs would be the report published at the close of the exposition. Certainly its value would be most lasting. By a careful editing, classification and arrangement of the numerous data, including maps, charts and photographs, it is no exaggeration to say that it would be the most complete and reliable compendium of municipal information ever published. It would have an imperishable value.

"ADMINISTRATION.

"For the administrative machinery of this department, I would recommend an advisory board of ten members, made up of the most representative men, such as Dr. Albert Shaw of New York, Hon. Clinton Rogers Woodruff of Philadelphia, Hon. Carroll D. Wright of Washington, D. C., Prof. Edmund J. James of Chicago University, etc. These gentlemen would constitute a body with ample ability to project the idea upon the broad lines commensurate with the end in view. The president of this body should be the executive head of the department and form the connecting link between it and the Director General of the exposition. Subordinates for office and field work would be indispensable.

"SOME REASONS FOR HAVING SUCH A CONGRESS AND EXHIBIT.

"The exposition will have something of an educational character. I assume it is not to be merely a show of freaks. Then, why not take an idea, such as proposed, which is original and interests so large a class of intelligent citizens? It is better to be a leader than an imitator. The exposition cannot afford simply to copy the work of its predecessors. It must originate attractive features along the line of twentieth century ideas. There is no question before the public to-day of greater interest or importance than that relating to municipal affairs.

"It has been urged as a strong objection that the statistics and information relating to cities would not appeal to the popular mind. My experience leads me to believe that it would be far more popular than the agricultural exhibit, because the average visitor to such expositions would be more interested in the relative tax rate and cost of administration of our city governments than with farm products. Every one is interested in that which affects the pocketbook, while only a fraction of the attendants would be interested in the question of agriculture.

"The proposed exhibit has been compared with the school exhibit at Chicago, upon which so much money was apparently wasted and which was so unpopular. Grant, for the sake of argument, that the point so far as the school exhibit is concerned is well taken. The two exhibits are only similar in that a part of this is to be graphically portrayed on paper by means of charts, maps, etc., which, according to space occupied, will form only a small fraction of the entire exhibit, while the one at Chicago was simply a mass of drawings and statistics—nothing else. That exhibit related to the work of school children from every district in the United States, bewildering thousands in number, all of which may be important enough in its way, but should not be compared for an instant with the work of men. Moreover, the information and statistics from cities will be gathered only from those of 20,000 population and upwards—about 300 in number—which would not present a wilderness of matter to be examined, but rather a concisely classified study arranged for the ready absorption by the busy man, who, though having but a general interest in the study, would be entertained and instructed by so comprehensive a view of so vital a subject.

"One of the objects of the exposition, I am told, is to promote a larger trade among our sister Americas, hence it is the purpose to call especial attention to every manufacturing interest. If this be true, what is to be done to call especial attention to the pavements, street cleaning, fire and police apparatus, and the multitude of other articles which are absolutely necessary to the conduct of a clean and well ordered city? So far as I am informed, nothing thus far has been planned to accomplish it. What better scheme for such a purpose could be inaugurated than the municipal exhibit and congress? Greater good would result to the industries selling to cities if such products were classified as a municipal exhibit than if they were scattered everywhere throughout the exposition. Such an effort on the part of the management would enhance the benefits to the exhibitor one hundred fold and would be a splendid trade promoter. As it happens, this is the opportune time for such an effort, because not only the smaller cities of the United States, but those of other countries in this hemisphere are pushing the work of improvement to a larger degree than ever before. Why not have a project which will benefit the millions of capital invested in these industries as well as the others?

"The one feature of the World's Fair which is oftenest referred to at this distant date, is the group of buildings which formed the court of honor. That was a picture, once seen will never fade. The buildings formed the greatest pulling qualities of the Fair, and that is a feature absolutely beyond the reach of the Pan-American so far as its proportions are concerned. Why not add an attraction which will contribute so much that is of vital and lasting importance and thus perpetrate the benefits of the exposition?"

## Laws Against Expectorating.

During the last month many of our leading newspapers and medical journals have contained notes or editorials on the proposed quarantine against tuberculous invalids to be instituted by the state of California.

Pulmonary tuberculosis is not a contagious, but only a communicable disease. The contact per se of the consumptive individual does not convey the disease. It is now well known that it is mainly the tuberculous expectoration which, when dried and pulverized to dust, constitutes the main danger of infection. The means to prevent infection from tuberculous expectoration or saliva—expectorating only in proper vessels, spittoons and pocket flasks, proper use of handkerchiefs during coughing, etc.—are now also universally taught.

It is absolutely demonstrated that a

[Continued on next page.]

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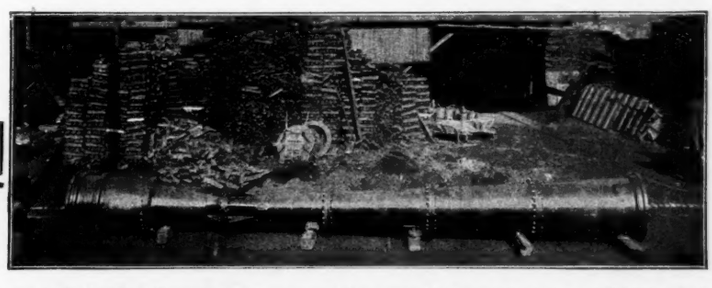

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tuberculous patient, if he takes proper care of his expectoration, does not constitute any danger to his fellowmen. In sanatoria and hospitals exclusively devoted to the care of consumptives it is of the rarest occurrence for an attendant to contract the disease; the hygienic precautions being so thorough. It may indeed be said, that in these houses for consumptives one is less liable to contract consumption than outside of them.

It is the right and the duty of California— and of every other state—to make and enforce rigorous laws against promiscuous expectorating and all other forms of propagating tuberculosis from man to man or from beast to man. The proper authorities of California should rigorously enforce these laws, especially those against promiscuous expectorating; and I should not blame them if they told the incoming invalid from another state, no matter in what station of life he might be, that if he willingly violated the health ordinances, or if, through carelessness with his tuberculous expectorations, he endangered the health of his fellow-citizens, he would be expelled from the state. I do not think that in this enlightened age, when we know the nature of tuberculosis, any government should prevent a conscientious tuberculous invalid from entering its domain, if he gave evidence that he would not become a burden to the community, and if he promised to comply with the sanitary laws.—"The California Quarantine Against Consumptives," by Dr. S. A. Knopf in the January Forum.

### What a Mogul Can Do.

That was a remarkable demonstration of what a Mogul can do, that occurred on the New York Central the other day, when engine Number 948, one of the new Moguls, hauled out train No. 11, the Southwestern Limited, made up of two mail cars, five passenger coaches and nine Wagner cars, sixteen cars in all. The total weight of the train was 1,832,000 pounds, or 916 tons, and the length of the train, including the engine, was 1,212 feet, or nearly a quarter of a mile. This engine made the running time of the train between New York and Albany, 143 miles, in three hours and fifteen minutes.

There is no railroad in the world which has a better roadbed, more skillful engineers, or better equipment, backed by loyal men always alert for the safety of their passengers, than the New York Central and Hudson River Railroad. What road can match its corps of men, from President Callaway down the long line of employees, to the humble and faithful trackmen who watch their sections of rails through the long hours of the night and day, in order to safeguard the lives of the travelers on trains whirling by their humble shanties, many of which nestle closely to the rails under their guardianship.—Editorial from the Albany Times-Union.

### Pan-American Municipal Congress and Exhibit.

Early last year, Mr. William S. Crandall, traveling correspondent of "City Government," evolved a plan for a municipal congress and exhibit in connection with the Pan-American Exposition to be held in Buffalo in 1901, which met with the approval of many of the national leaders in municipal affairs, including Governor Roosevelt. More recently a similar matter has been called to the governor's attention by Dr. William H. Tollman, of the League for social service, New York city. The governor emphasized the importance of these suggestions by a special recommendation in his recent message to the legislature, as follows:

[Continued on next page.]


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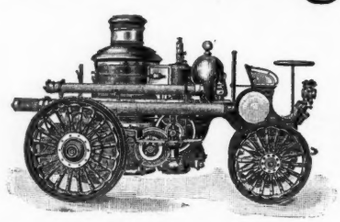

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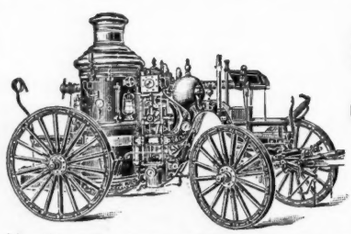

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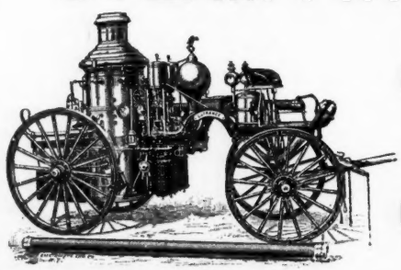

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ELMIRA, N. Y.

I particularly desire to call the attention of the legislature to the Pan-American Exposition. This exposition will be a source of the utmost pride to the whole state, and all our citizens should feel an active concern in making it a greater success than anything of its kind held on this continent—second only to the great national expositions.

My attention has been called to the desirability of having at this exposition a department of social economy. Interesting and important as it is to exhibit the natural resources of the Americas and the products of their industries, it is no less important to present the life of the people themselves and to show their social institutions.

The industrial and social revolution, consequent upon the introduction of steam and electricity, has produced a new civilization, with many new problems yet unsolved, and new conditions to which we have only imperfectly adjusted ourselves. By providing for a department of social economy at the Pan-American Exposition, much light may be thrown on these problems, and not a little may be done for the amelioration of social and industrial conditions.

The scope of this department should be broad enough to include, for the several countries and peoples, a comprehensive presentation of their industrial, agricultural, commercial, economic, social and philanthropic conditions.

These subjects should be graphically represented by maps, charts and photographs, which would constitute an important and attractive exhibit. Such a presentation of conditions in Cuba, Porto Rico, Hawaii and the Philippines would be of special interest. These subjects might be further illustrated by a series of congresses, in which experts would discuss topics of popular interest and of practical value.

The beginning of a new century would seem to be a peculiarly fitting time to gather up the results of investigation and experience in the preceding century by which to help the peoples of North and South America up to a higher plane, physical, mental and moral.

I am heartily in favor of the creation of such a department of the exposition, and recommend that a sufficient appropriation be made by the legislature to establish and successfully conduct it.

I commend the exposition to your special attention, and hope you will aid it in every way.

It is to be hoped that the governor's wish will be fully realized, for no more important problem than the better government of our cities confronts the country to-day. We publish an outline of the proposed plan in this issue. We would be glad if every city official would tell us what he thinks of it.


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